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ADDRESSES AND ORIGINAL ARTICLES

VISCERAL NEUROSES

By JOHN A. RYLE, M.D. Lond., F.R.C.P.

REGIUS PROFESSOR OF PHYSIC IN THE UNIVERSITY OF CAMBRIDGE; CONSULTING PHYSICIAN TO GUY'S HOSPITAL, LONDON

I*

AN invitation to lecture before this College compels a considered selection of subject, title, and material which may in itself be held worthy of brief analysis. In my choice of subject I have been influenced partly by developing personal interest and by the nature and quantity of the material within my reach, and partly by a desire to examine accumulated observations in such a way as to clarify my own thought and, where possible, to assist the thought and practice of others. I have always preferred the appeal of familiar phenomena to the excitation of the strange or rare, and rightly or wrongly, but as time and the opportunity of a physician's life dictated, have set my training in recognition, description, and classification before the call to intimate or particular research. In my clinical philosophy the general human problem and the special pathological problem, alike only in their complexity, have claimed, if not the same attention at least an equal regard. The title of these lectures is borrowed from a distinguished predecessor at Cambridge, one of our own most scholarly Fellows, the late Sir Clifford Allbutt. In 1884 Clifford Allbutt gave his Goulstonian lectures on the Visceral Neuroses. Many besides myself must have enjoyed and often re-read the slender booklet in which they were later published. The fifty-five years which have since passed have witnessed great advances in the methods open to us for the objective study of the normal and morbid physiology of the viscera, and, although many of Allbutt's observations are as sound and instructive today as when they were first written, others would require revision in the light of our newer and more precise knowledge. Although his understanding of men, women, and temperaments may still serve to correct our over-mechanistic interpretation of certain visceral disturbances, modern chemistry, radiology, and endoscopic technique, had they been then available, would certainly have traced some of his "neuroses" to an organic defect.

But we have advanced not only in the realm of objective physical inquiry, for psychology too has begun to assist the elucidation of bodily discords in a more methodical way. Moreover, those peculiar humoral disturbances now commonly called allergic are today regarded as capable of influencing other structures besides the bronchioles and the skin. In the scientific field the fundamental contributions of two great physiologists, Pavlov and Cannon, have thrown light in dark places and given us explanations and experimental proof of numerous phenomena which clinical study alone could never have unravelled.

It seemed to me, therefore, that the time was ripe for a reconsideration of Allbutt's problem. If I do no more than point the way to a clearer classification and understanding and a better diagnostic of the functional misdemeanours of certain organs, my observations may yet serve a useful purpose and suggest fresh lines for future study.

My information has been mainly culled from the files of my private cases. Intimate personal histories, adequate family histories, careful symptom-analysis, and a systematic exclusion of organic possibilities are a necessary preliminary to the diagnosis of the visceral disorders. These evidences are better obtained in the atmosphere of the consulting-room or the sick-room than in a ward or outpatient department. It is probable too that the visceral neuroses are of more frequent incidence in those classes which do not earn their livelihood or control their homes by manual labour. Furthermore, the disability accompanying a visceral neurosis, although often prolonged and considerable, is not as a rule so severe as to call for admission to hospital. Writing of the colonic neuroses Hawkins (1906) said: "Intestinal neuroses diminish in frequency as we descend the social scale." The same can be said of the other visceral neuroses, although allowance must always be made for the greater frequency with which the prosperous classes seek medical advice and for their better aptitude for describing symptoms.

NATURE AND DEFINITION OF VISCERAL NEUROSIS

The visceral neuroses may be held to embrace those disorders of visceral movement, secretion, or sensation which occur in the absence of organic disease. I shall not include in my category mere *anxiety about an organ* in the absence of good evidence of such disorder. It is not rare for patients to present themselves in a state of anxiety about an organ on account of symptoms having no connexion with it, or because a suspicion of disease affecting it has been created by the remarks of friends or an unwise medical opinion. Although, therefore, anxiety may and often does cause or contribute to a visceral neurosis, and although a visceral neurosis may in turn maintain anxiety, the concept of such a neurosis should include some real disturbance of visceral function. To make our meaning more precise we must also exclude the operation of remote as well as local organic disease, for disease in one viscus may propagate nervous impulses which disturb the function of another viscus, and blood-states or structural disease of the central nervous system may be expressed by disorders of function in one or more of several intact organs. Of such disorders the dyspepsia (as distinct from the primary gall-bladder pain) which accompanies cholecystitis, the cardiac dysfunction of anæmia, and the vomiting of tabetic crises are familiar examples.

All the functional disorders of the hollow organs which we have in mind can, broadly speaking, be regarded as due to an interference with the nervous regulation which derives from the sympathetic and parasympathetic systems and controls the rhythm, quality, and quantity of the contractions in plain muscle and the secretions, blood-supply, and sensations of these organs. We must further refine our concepts when we come to consider dysfunction due to chemical stimulation. Such stimulation must be accompanied by local metabolic change although not by organic disease in the sense of persisting tissue modifications, the avoidance of which is probably due to the counteraction or reversibility of a chemical change. Chemical stimulation may be exogenous, as in the case of foods, poisons, and drugs, or endogenous, as in the case of the secretions of the pituitary or the suprarenal glands. We also accept, on the basis of the researches of Loewi and Dale and their co-workers, that the nervous impulse

* The first Croonian lecture, delivered at the Royal College of Physicians on May 18, 1939.

itself, however initiated, is associated with a chemical discharge.

Now, it is a remarkable but frequently confirmed observation that certain clinical phenomena, such as angioneurotic œdema and bronchial spasm, can be precipitated, on the one hand, by emotional causes, which presumably operate through the nerves, and, on the other, by an inhaled, ingested, or injected foreign protein, which presumably operates through the tissue fluids. So specific in type are these clinical or biological responses, that it is difficult to believe that the determining stimuli in the two instances are widely dissimilar. In other words, whether we regard certain disturbances (among which we may come to include some of the hollow-organ neuroses) as due to emotion or to allergy or sometimes to one and sometimes to the other, we can simplify our ideas by supposing in each case the immediate influence of a similar or identical chemical stimulus. A nervous subject is sometimes but not necessarily shown to be sensitive in the allergic sense. An allergic subject is frequently, perhaps, but not always shown to be sensitive in both senses. His sensitiveness may be increased or conditioned in many new ways with the passage of time. The immediate or determining stimulus, however, for his particular clinical or biological response may for the present be presumed to be specific and chemical.

Finally, in so far as pharmacological counteraction of the visceral or vascular phenomena of emotion or of allergy is possible, we find that certain well-defined substances, such as atropine, eserine, and ephedrine, are the most effective. There are observations available, as Gaddum (1938) and Fraser (1938) have lately reminded us, which suggest that the influence of these substances is intimately related with the interactions of certain endogenous substances now held to be the chemical determinants of the local muscular reaction to a nervous impulse. These substances include adrenaline with its counteragent amine oxidase and acetylcholine with its counteragent cholinesterase.

Briefly we are coming nearer to an understanding of clinical symptoms (or biological responses) variously and loosely attributed in the past to nervousness, idiosyncrasy, and allergy. Whether we include these responses under the generic title of "neuroses" or invent a better name for them, we are finding experimental and clinical justification for considering them together and not separately and for regarding them, however originated, as dependent on specific physiological disturbance rather than hypothetical nervous influence or structural change. With very rare exceptions the responses themselves, however frequently and for however long a period they may be repeated, remain uncomplicated by secondary structural change, for the most careful examination of the organs and tissues concerned reveals no lasting abnormality. In each episode, in fact, the eventual counteraction of an excessive chemical stimulation is complete and perfect.

Analogies have been drawn between the visceral neuroses and stammering. Sir James Paget (1879) in a classical paper on "Stammering with other organs than those of speech," in which he discusses the neuroses of the bladder in particular, wrote: "Stammering, in whatever organs, appears due to a want of concord between certain muscles that must contract for the expulsion of something, and others that must at the same time relax to permit the thing to be expelled." The result, as with the speech stammerer, is inhibition or disorderly action with distress or, in the case of some viscera, actual pain. The victims of visceral stammering are of kindred temperament with the speech stammerers. Visceral and speech stammering not infrequently occur in the same person. Again and again we can trace the symptoms of the visceral neuroses to a failure of relaxation or to a too precipitate contraction of plain muscle, or to a loss of the normal tonic or peristaltic habit. Kennedy and Williams (1938) have also drawn attention to the association of stammering and the allergic disorders. From this we must rather conclude that there is an association between nervousness and allergy than that stammering is an expression of allergy. The terms "vagotonia" and "sympathicotonia," associated with the names of Eppinger and Hess (1917), sought to explain liability to many of the visceral disturbances, but I am not satisfied that a simple separation into these reactive types is clinically justifiable.

FUNCTIONAL AND ORGANIC

In considering, as we shall later do, the individual nature and symptomatology of the visceral neuroses it should be emphasised that, although generally distinguishable by careful clinical analysis, they can and do imitate organic disease sufficiently closely to lead again and again to erroneous diagnoses. The recognition of a visceral neurosis depends largely on the recognition of its subjective phenomena, and we would here do well to remind ourselves that all subjective symptoms, whether due to structural disease or other physical cause or to nervous or chemical unrest, express only a disturbance of function, and that a similar disturbance of function may result from any one of these causes. A symptom, in other words, is specific for a disturbance of function and not for its cause. A carcinoma or a nervous spasm may each cause colonic pain; in both instances the pain accompanies abnormal tension, perhaps with attendant ischæmia, in the muscle-fibre. Cardiac pain may be due to emotional stimuli, to anæmia, or to sclerosis of the coronary arteries; in each of these instances we believe the pain to be related to chemical disturbance arising from anoxia in the cardiac muscle-fibre.

To call an organic disease functional is an old and regrettable error. It may be as grave an injustice to a patient to call a functional disease organic. It is melancholy to contemplate the countless abdominal operations which have been performed and the countless physical treatments which have been prescribed in the past for disorders affecting the stomach, the bowel, the heart, the uterus, and other organs, which are no more "organic" than bronchial asthma, extra-systoles, blushing, or blepharospasm.

Differential diagnosis must be decided partly, it is true, by the quality and degree of a subjective symptom, but partly also by associated phenomena, and by temperamental assessments and routine objective tests. Without a physiological interpretation of symptoms, however, all diagnosis remains incomplete.

HISTORY AND LITERATURE

To attempt to combine a condensation of personal experience with an adequate digest of the scattered literature of so wide a subject as the visceral neuroses would be a difficult task. In a large but compact volume running into 430 pages and with a bibliography of 150 pages Dunbar (1935) has lately reviewed and abstracted the literature relating to the psychosomatic disorders covering the period 1910–30. Of this literature a considerable proportion is concerned with the emotional disturbances of the viscera, but it must be allowed that the advancement of knowledge

in a clinical regard within that period and since has been neither very methodical nor very extensive. Cannon and Pavlov have given us basic knowledge and a host of fruitful ideas, but these have not influenced contemporary medical thought as they should have done.

In recent years important observations on the influence of the emotions on the organs have been made by Wittkower (1935) and his collaborators, who have employed psychological experiment in conjunction with physiological and radiological studies and the psychiatric approach. More attention, however, is paid at present to the psychology and psychiatry of these disorders than to their morbid physiology, their symptomatology, and their differential diagnosis from organic states. Careful description and differentiation should surely anticipate or at least accompany therapeutic innovation. Where psychiatry will be as liable to failure as the therapeutics of the physical school is in its omission to study the type or mode of the physiological disturbances consequent upon emotion. Furthermore it has not been sufficiently emphasised that numerous factors other than emotion may contribute to the establishment and perpetuation of a visceral neurosis.

Perusal of the literature and contact with the practice of the last quarter of a century reveal stages of thought and changes of fashion in which sometimes the organ, sometimes the nervous system, sometimes a mechanistic, sometimes an infective, emotional, or chemical hypothesis has focused attention for the time being. Terms such as "vagotonia" or "organ inferiority" have replaced local pathological concepts such as "colitis," and in the field of treatment surgical trial and error and other physical measures are making way for psychiatric experiment. With patient winnowing wheat may, it is true, be found among the chaff of much vague and unsatisfactory pathology. From close clinical study, however, and from such study alone, emerges the prime necessity of observing and investigating the "whole man" if we are to reveal the pathogenesis and paint the true picture of a visceral neurosis and effectively to assess, for purposes of understanding and management, the contributions of heredity, temperament, physique, environment, emotion, endocrine dysfunction, allergy, and the conditioned reflex. Together with such study, and not separately from it, we should seek, whenever possible, to employ such special methods as physiology and psychology can prove to be effective.

CRITERIA OF ALLERGIC PHENOMENA

In describing some of the visceral neuroses I shall have occasion, as already indicated, to consider the possible contribution of natural sensitivity or allergy. The list of manifestations attributed to allergy has already been unduly expanded. Many of the newer additions have been made with little justification. The term itself is providing a new cloak for ignorance. I suggest that no visceral, cutaneous, or vascular symptoms should be held to be allergic unless some, and preferably several, of the following postulates are fulfilled:

(1) The symptoms should bear close comparison with symptoms observed in human anaphylaxis or serum-sickness.

(2) There should be a history of "idiosyncrasy" in respect of some food, beverage, tobacco, drug, or other extraneous substance, or a well-defined response to specific cutaneous tests.

(3) There should be observed in conjunction with the suspect phenomenon, whether coincidentally or at other times, other accepted allergic phenomena, such as asthma, hay-fever, urticaria, and angioneurotic œdema.

(4) There should be a family history of these disorders.

(5) The disturbances should show some such intermittency or periodicity as obtains in these disorders.

(6) Every care should have been taken to exclude the presence of irreversible structural disease.

(7) As additional tests Hurst (1933) mentions a favourable response to adrenaline and the presence of eosinophilia.

The only final proof of allergic sensitiveness is a specific response to a specific allergen, but we must recall that this is by no means universally obtained even in such conditions as bronchial asthma and urticaria; hence its absence in other conditions need not be held to exclude them. The clinical observations reported hereafter suggest that we have latterly, in our clinical assessments, attached too much importance to the idea of specific sensitivity, and that the so-called allergic response is only one of many expressions of a hypersensitiveness to adverse stimuli (whether physical, chemical, or psychological) which attaches to certain types of human constitution. It is a common observation that the same individual may manifest the same intestinal intolerance to a food-stuff, an east wind, fatigue, or a mental problem. Angioneurotic œdema, although it may be induced by a bee-sting or the injection of a serum, is often evoked by emotion. The general and nervous health or balance of the individual at the time of exposure to an adverse stimulus may also determine the appearance or non-appearance of the specific response, much as other forms of reflex activity may be heightened or diminished by an attendant but unrelated circumstance. Nervous unrest and allergy are often partners; both may be capable of evoking the same symptoms in the same patient; but it remains for us to discover the nature of the relationship and the reason for the similarity of their effects. The primary evidence for these statements is to be found in the daily experience of the clinic; the final explanation of the observed phenomena will only be attained by experimental methods.

SCHEME OF INQUIRY

I propose to confine myself to a consideration of functional disorders affecting certain of the hollow organs. Of the solid organs the liver particularly may also have its nervous disturbances, but these have not yet acquired clear definition, the nature of the disturbances is uncertain, they are rarely painful affections or locally manifest, and they seldom lead to serious misinterpretations. Nor shall I consider the respiratory neuroses. Asthma is too large a subject. Other disturbances of respiratory rate or rhythm under the influence of the emotions are scarcely visceral in the true sense. Of the hollow organs I shall review in turn the gullet, the colon, the rectum, the urinary bladder, and the heart. The uterus, for lack of special knowledge, although its spasmodic neuroses are well known, I have left out of account. Omission of the stomach may seem a peculiar decision, but I have to confess that, although much of my time and thought have been devoted to gastric physiology and pathology, and although gastric neuroses are common enough, the difficulties of separating them from organic states, from associations of organic change with functional super-additions (including the effects of aerophagy), or from reflex disorders of gastric function due to organic disease in neighbouring structures, remain so considerable that I have preferred to concentrate on other viscera. Alvarez (1930), in America, with his sensible physicianly approach, has made valuable contributions to

the clinical study of the gastric neuroses, but they await a more intimate investigation. The organs chosen for consideration in these lectures are less liable than the stomach to inconspicuous inflammations and ulcerations and to reflex disturbances and can be more certainly passed as free from organic defect by modern methods of investigation. We shall, perhaps, be in a better position to segregate the gastric neuroses when gastroscopy has added to radiology and chemical analysis a more direct and reliable knowledge of the living mucosa. In the meantime the principles which should govern their clinical study differ in no essential from those to be described in the case of other organs.

The descriptions and discussion which follow are based upon a perusal of the records of 33 cases of œsophageal neurosis, 321 of colonic neurosis, 15 of rectal neurosis, 2 of serious bladder neurosis (the minor neuroses of the bladder being too numerous for analysis and not separately indexed in my files), and 63 of cardiac neurosis. Many of the descriptions will be familiar; others may seem to have gained something through added detail and a closer symptom-analysis than is usually accorded them. Among the visceral neuroses some are of indefinite type and some of more constant pattern. It is with the second group that my descriptions will be chiefly concerned. The more constant the clinical pattern the more likely is it that we are confronted with a specific physiological error. To attempt an analysis of the indefinite types of visceral neurosis would scarcely as yet prove a fruitful labour. In classifying results I debated at first whether it would be better to take each organ separately and to consider its important neuroses or under the several ætiological headings to consider examples of various visceral manifestations. The more I considered my case-histories the more pronounced became their ætiological complexity, even though competence for the recognition and sifting of likely causal factors in the individual may be allowed to have increased with experience. It was also clear that different stimuli repeatedly caused or appeared to cause the same response. For these reasons and because anatomical classifications in medicine still have their uses the first plan appeared the only reasonable one to adopt. Brief mention will be made, in passing, of organic states which may be confused with the neuroses and particularly certain states which have recently been given distinctive portraiture by improved methods of objective study. Multiple neuroses often coexist in the same patient and are among the best evidences of a general or emotional cause. To these associated neuroses frequent reference will be made.

ÆTIOLOGY

Certain general ætiological considerations must claim our attention before the particular neuroses are passed in review. When a patient presents himself with a complaining organ, when no evidence of structural change in that organ is forthcoming, and when symptom-analysis and the circumstances of his life and temperament suggest that he may properly be regarded as a victim of a visceral neurosis, diagnosis in the full sense still remains incomplete until we can suspect an exciting stimulus and have obtained demonstration or at least framed a reasonable physiological explanation of the mechanism of the neurosis. Clinical, radiological, and other objective investigations have done much to explain the morbid physiology of the hollow organs and can discover or exclude organic states with increasing certainty. Intimate clinical histories and hypothesis based upon them and strengthened by the work of Cannon and by Pavlov's classical experiments on the conditioned reflex can at least carry us a stage further in the study of ætiology and may at present be held to justify the following conclusions in regard to the origins and perpetuating causes of the visceral neuroses.

(1) The origin of a visceral neurosis may be found in a previous but finally departed organic injury. Thus a past dysentery may leave in its wake a spastic or irritable colon, or a cystitis be followed by a nervous frequency. In similar fashion a bronchitis is sometimes succeeded by asthma, or a conjunctivitis by habitual blinking. "Conditioned irritability" would, perhaps, be an apt definition of such a neurosis. In each example quoted the local inflammatory irritation has passed, but the habit of irritability remains. In each example a central or peripheral irritation, sometimes minimal and often far to seek, is required to determine the active dysfunction.

(2) The origins of a visceral neurosis may be found in an inborn, or more rarely an induced, sensitiveness or allergy. In such case the "irritability" is conditioned by a "humoral" instability, while the active dysfunction is determined by specific stimuli. As with asthma, however, the passage of time may result in a more ready determination of attacks by both old and new stimuli. The sensitiveness becomes less specific. The active irritation, as distinct from the irritability, is determined in new ways. As will be shown, colonic and rectal neuroses, which are sometimes associated in the same individual with asthma, urticaria, hay-fever, or migraine, can rarely be traced to a single specific cause.

(3) The origins of a visceral neurosis may be found in a psychological instability unassociated with the conditioning factors named above but manifest as anxiety or other emotional unrest. Prominent among the perpetuating factors is the patient's fear that the visceral symptoms may be due to organic disease.

(4) As with bronchial asthma, so with the disorders of the abdominal viscera any or all of the provocative factors named may operate simultaneously or at one time or another in the same individual and may serve as reinforcing stimuli. A humoral state may provide the condition for an emotional reaction, or an emotional state for a humoral reaction. An asthmatic tendency based on a native allergy, and the asthmatic attack itself due primarily to pollen or some other specific factor, may, as the years pass, undergo aggravation or be occasioned by a variety of other factors, physical or psychological, and including dust, fatigue, locality associations, or emotional repressions. A similar evolution may eventually be found to be true for the neuroses affecting the abdominal viscera.

(5) Whatever conditioning or determining causes we invoke, we have good reason to suppose from studies of temperament, physique, and family history that hereditary predisposition is a main foundation upon which the visceral neuroses are based. Both conditioning and determining extraneous stimuli—e.g., a past inflammation or present irritation—operate frequently but with little or no effect in persons lacking the nervous or humoral predisposition or diathesis. In most cases of visceral neurosis there is a history of nervousness on one or both sides of the family. The inherited tendency or diathesis is best regarded as a biological variation. Variations may be observed in degree as well as kind. Correlated variations, here as elsewhere in nature, are common.

(6) Finally (although such cases cannot strictly come within our category) an organic state incapable

of producing symptoms under favourable conditions may, in the presence of anxiety, lead to visceral disorder. Thus, I have seen achalasia of the cardia with pronounced œsophagectasia causing small inconvenience in quiet times or even under the crudest dietetic conditions in times of holiday, but under the worrying conditions of professional life, domestic infelicity, or international crisis occasioning a return of the usual troublesome dysphagia and regurgitation. Anxiety may also perpetuate angina pectoris, which will again disappear with relief of mind, even though we have good reason to suppose that the primary basis of the pain was organic coronary artery disease.

I have thought it well to formulate these views relating to ætiology in advance of the evidence on which they are based. This evidence has been sought and must be sought again in clinical experience which constantly checks and modifies its own conclusions, in the frequent re-reading of case-notes, and, where possible, by "follow-up" inquiry. I believe and shall hereafter support the belief that the classification of causes outlined above, although it may stand in need of fuller proofs, is a useful one, if only as an aid to the management of cases and as a reminder that the visceral neuroses are not all or wholly emotional in origin, not all or wholly implanted in allergic soil, and not all or wholly a consequence of physical factors in the shape of present or past organic irritation.

The whole man and his environment will remain an essential part of the study of the visceral neuroses, whatever refinements of knowledge may accrue from physiological, biochemical, or psychological inquiry.

REFERENCES

Allbutt, T. C. (1884) On Visceral Neuroses, London.
Alvarez, W. C. (1930) Nervous Indigestion, London.
Dunbar, H. F. (1935) Emotions and Bodily Changes, New York.
Eppinger, H., and Hess, L. (1917) Vagotonia, 2nd ed., New York.
Fraser, F. R. (1938) *Brit. med. J.* **1**, 1249, 1293, 1349.
Gaddum, J. H. (1938) *Ibid*, p. 713.
Hawkins, H. P. (1906) *Ibid*, **1**, 65.
Hurst, A. F. (1933) in Price's Text Book of the Practice of Medicine, London.
Kennedy, A. M., and Williams, D. A. (1938) *Brit. med. J.* **2**, 1306.
Paget, J. (1879) Clinical Lectures and Essays, 2nd ed., London.
Wittkower, E. (1935) *J. ment. Sci.* **81**, 534.

"... The world of today is suffering from a crisis of disillusion and resentment against reason, simply because it believed too much in it before. Human life can only stand one homeopathic dose of reason at a time. In love with logical perfection, and also afflicted by the injustices and inequalities of everyday life, the men of the nineteenth century tried to force the pace of human progress by establishing the perfect society ruled by rationalist justice. This noble effort was the dream of the French Revolution. Under the Revolution itself human life turned with unheard-of violence against the domination of rationalised logic, and the world saw this strange paradox: the triumph of the most unbridled irrationalism in the name of the most rigid reason. This affliction has gone on in various forms during the whole of the nineteenth century, and it is even today the keynote of many happenings, both large and small, which we see around us. . . . But England never took part wholeheartedly in this rationalistic mania of our epoch. . . . However much she might be in love with ideas, she always retained a certain reserve for the unexpected, the errors of men, and the ways of unfathomable nature. As an external and positive symbol of this attitude, England never gave the first place in her public life to the intellectual or the thinker. But, actually because of that, the intellectual and the thinker still occupy the high place in England that they have always had, while one sees them dethroned and persecuted in countries that have suffered from an excess of intellectualism, and where political advance was wont to be preceded by philosophical standard-bearers."—SALVADOR DE MADARIAGA, "The Island of Commonsense," in *The Listener*, July 20, 1939, p. 110.

ENCEPHALOMYELITIS FOLLOWING ADMINISTRATION OF SULPHANILAMIDE

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With a Note on Histological Findings

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NUMEROUS toxic manifestations are known to have followed the use of sulphanilamide. Many of these are not serious; for example cyanosis, dermatitis, febrile reactions, nausea, vomiting, and enteritis. Others, which are uncommon but more important, are anæmias, agranulocytosis, and hepatitis. Their cause seems to be an idiosyncrasy to the drug, for they develop very rarely, and often after only small amounts of the drug have been taken. Toxic effects on the central nervous system have seldom been recorded. In the two following cases symptoms of encephalomyelitis appeared after administration of small quantities of sulphanilamide.

The First Case

A woman of 33 was admitted to the Southend-on-Sea General Hospital on Sept. 7, 1937.

History.—Four years previously she had begun to suffer from arthritis of the fingers, ankles and knees, and for this she was treated with gold injections. Six months later she developed lupus erythematosus.

Examination.—The lupus erythematosus affected chiefly the nose, face, ears and back of the hands. The rheumatoid arthritis involved the fingers, wrists, knees and ankles, and she complained of pain in the affected joints. There was moderate anæmia, the blood-count being:—

Red cells	4,096,000	Polymorphs	70 %
White cells	5700	Lymphocytes	26 %
Hæmoglobin	65 %	Large mononuclears	4 %
Colour-index	0·8		

Progress.—The temperature rose occasionally to 99° or 100° F. On Sept. 28 treatment with sulphanilamide was started, and she was given 0·5 gramme twice daily. Even on this small dose she became cyanosed on the second day, but as she was in no way distressed, administration of the drug was continued. On Oct. 11 the temperature rose to 101·5° and she had a slight headache. Next day the temperature was 104° and the headache more severe. The drug was stopped. Two days later (Oct. 14) she suddenly developed complete flaccid paralysis of both legs, her neck was a little stiff, the knee- and ankle-jerks and the abdominal reflexes were absent, and the plantar reflexes were not elicited. Sensation for light touch was lost up to the level of the iliac crests, and sense of position in the feet was also lost; but pain and vibration sense remained.

The cerebrospinal fluid (C.S.F.) removed on Oct. 14 was turbid and under increased pressure. Cells 16,000—almost all polymorphs, with a few red blood-cells. Protein 100 mg. per 100 c.cm. Chloride 660 mg. Globulin, marked excess. No tubercle bacilli seen, and culture sterile. Leucocytes 4700 (polymorphs 70 per cent., lymphocytes 27 per cent., large mononuclears 2 per cent., eosinophils 1 per cent.).

On Oct. 15 sensation was completely lost up to the level of the fifth thoracic segment, and retention of urine developed. On the 17th the anæsthesia had ascended to the second thoracic segment, and there was consolidation at the bases of both lungs. She died on the 18th.

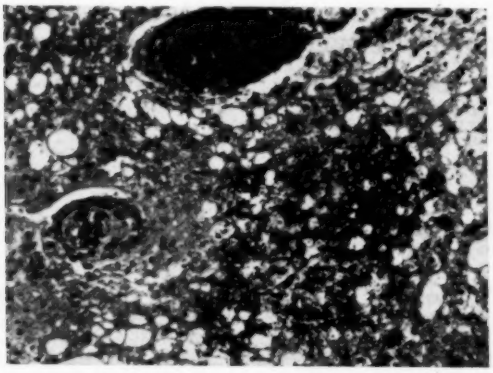

FIG. 1—Thoracic cord. Hæmatoxylin and eosin. Thrombosis of two small vessels and a hæmorrhage in white matter. (× 115.)

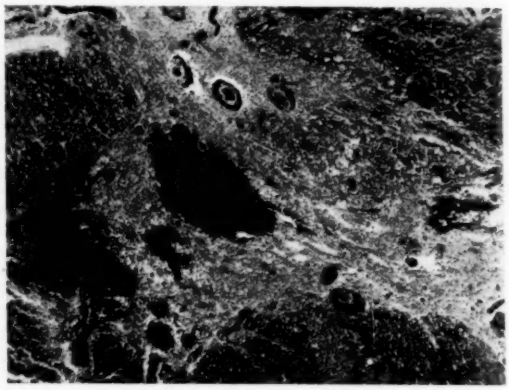

FIG. 2—Thoracic cord. Loyez. Hæmorrhages in substance and in sheaths of vessels in grey matter. (× 30.)

Post-mortem examination.—There was hypostatic pneumonia of both lungs, with caseating hilar glands. The liver showed chronic venous congestion, with caseating glands at the hilum. The lumbar region of the spinal cord was softened and diffluent. The thoracic cord showed injected vessels and minute streaked hæmorrhages.

HISTOLOGY OF BRAIN AND CORD

(DR. GILMOUR)

Sections were made from the following tissues received in 4 per cent. formaldehyde: cerebral cortex, 3 portions; cerebellum, 1 portion; medulla, 2 portions; spinal cord, 4 portions (1 upper cervical, 2 thoracic, and 1 lumbar). Paraffin sections prepared from all the tissues were stained with Ehrlich's hæmatoxylin and eosin, Weigert's iron hæmatoxylin and van Gieson, Hart's modification of Weigert's elastic method, and Loyez's method for myelin. Frozen sections were stained by Herxheimer's method. Weigert-Pal preparations were made from one of the thoracic portions of the cord.

The *medulla*, two portions of the *cerebral cortex*, and the *basal ganglia* were normal histologically. There was a very slight desquamation of leptomeningeal cells forming round free cells with abundant cytoplasm in places on the surface of the cerebellum, and in the depth of a sulcus in the third portion of the cerebral cortex. These are of doubtful significance.

In the *upper cervical cord* a few lymphocytes and round leptomeningeal cells were present about a few veins in the leptomeninges.

In one portion of the *thoracic cord* three small veins in the leptomeninges showed recent thrombosis. Some round leptomeningeal cells were present about vessels in the anterior fissure, and associated with some lymphocytes also in the adventitia of vessels in the posterior median septum. Three small vessels in the white matter were thrombosed (fig. 1 illustrates two of these). Fibrin was precipitated in a few, and hæmorrhage was present (fig. 2) in many Virchow-Robin spaces. All vessels in the cord were congested. One showed necrosis of its wall (fig. 1). Many scattered minute hæmorrhages were to be seen in both grey and white matter (figs. 1 and 2). The peripheral white matter in many places showed great ballooning of myelin sheaths by a clear fluid-like substance (fig. 3). The grey matter was slightly shrunken and œdematous, and the bodies of the neurones were usually very degenerate, and many had disappeared. Slight proliferation of rounded microglia cells was seen in the grey matter, and about some vessels in the deeper parts of the white matter. There had been some loss of myelin in the ballooned areas, in the grey matter, and about the vessels in the deeper white matter (figs. 4 and 5).

The other portion of the thoracic cord and its meninges were congested. Fibrin was present in a few, and hæmorrhage in other Virchow-Robin spaces in the cord. Œdema, and degeneration and loss of many bodies of neurones were evident in the slightly shrunken grey matter. There was much ballooning of the peripheral white matter. In the grey matter, and around vessels in the deeper white matter, many rounded microglia cells were noted. The subarachnoid space was filled with crushed and softened cord substance which had come from the lumbar region during the process of removal of the cord. In frozen sections one or two fat granule cells were present in the adventitia of a few vessels in the cord.

The *lumbar cord* was collapsed from loss of much of its substance, and the pia was wrinkled. A small artery in the pia showed fibrinoid necrosis, thrombosis, and slight leucocytic infiltration and fibrin deposition in the adventitia. A few veins in the leptomeninges showed recent thrombosis. There was frequently slight lymphocytic and leucocytic infiltration or hæmorrhage in the adventitia of the congested vessels within the cord. Some vessels showed necrosis and slight leucocytic infiltration of their walls. The cord substance was greatly reduced in amount, fragmented and structureless. There was hæmorrhage in a spinal nerve-root. Much fragmented structureless cord tissue was present in the subarachnoid spaces, derived from the cord by trauma during its removal.

The pathological changes consisted of softening of the cord substance, and various vascular lesions. The latter consisted of congestion, hæmorrhages, and thrombosis in small arteries and veins, and fibrinoid necrosis of the walls of small vessels. The softening was shown by ballooning of the myelin sheaths in the superficial white matter, proliferation of rounded microglia cells and demyelination around some vessels in the deeper white matter and in the œdematous slightly shrunken grey matter, and by the loss of many bodies of the neurones. This was seen in the thoracic region, but softening had been so marked in the lumbar region that the tissue was semifluid, and readily escaped into the subarachnoid space during removal of the cord.

The Second Case

A woman of 28 was admitted to the hospital on Nov. 4, 1937, complaining of painful red swellings on the legs.

History.—For ten days she had had sore-throat, generalised aches and pains, sweating and fever.

There was no swelling of joints. On the day before admission she developed raised red tender spots on the front of both her legs. Her past illnesses included rheumatic fever and frequent attacks of tonsillitis.

Examination.—Temperature 102° F. Acute follicular tonsillitis, and moderate bilateral cervical adenitis. Numerous scattered lesions of erythema nodosum on the front of both legs. Heart and chest normal. Cranial nerves normal; knee-jerks, ankle-jerks, and abdominal reflexes present; plantars flexor.

Course of illness.—After five days' treatment with salicylates the temperature became lower and the lesions less conspicuous. On Nov. 9 treatment was commenced with sulphanilamide, 1·0 gramme thrice daily, and slight cyanosis developed after twenty-four hours. On the 14th, after six days' administration of the drug, her temperature rose to 103°, and there was a fresh extension of the lesions of erythema nodosum. She complained of severe headache and vomiting, and there was severe shooting pain in the right leg, which showed slight muscular weakness. The cranial nerves were normal, the knee-jerks and ankle-jerks were much exaggerated, there was bilateral ankle-clonus present, the abdominal reflexes were absent, and the plantar responses were flexor. Lumbar puncture on the 14th produced a clear cerebrospinal fluid, normal on examination, and not under pressure.

Sulphanilamide was stopped. The temperature returned to normal after four days, and the headache and pain in the leg disappeared after a few weeks. On discharge there was still some weakness of the right leg. The abdominal reflexes were absent, the knee-jerks and ankle-jerks were markedly exaggerated, and there was still ankle-clonus on the right side.

Discussion

In these two cases lesions of the central nervous system developed during treatment with sulphanilamide. In case 1 the symptoms suggested an acute ascending myelitis; in case 2 the clinical findings were consistent with encephalomyelitis. The outstanding post-mortem features of case 1 were the perivascular demyelination in the thoracic cord, the vascular damage, and the massive softening of the lumbar cord.

(1) The *perivascular demyelination* is of particular interest, because it is the constant and essential lesion of postvaccinal and postinfectious encephalomyelitis and the encephalomyelitis occasionally seen after antirabic inoculations. It has however also followed arsenic injections (Russell 1937), although here the commoner picture is a hæmorrhagic encephalitis without any perivascular demyelination.

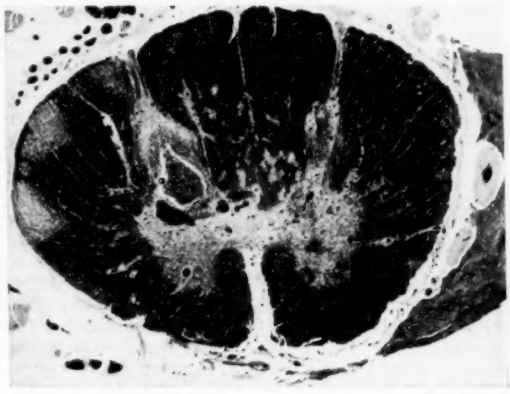

FIG. 5—Thoracic cord. Loyez. Ballooning of peripheral white matter in places, perivascular demyelination in deep white matter, hæmorrhages in grey matter and amorphous debris in subarachnoid space derived from the lumbar region during removal of the cord. (× 8.)

(2) *Vascular damage* was prominent. Minute scattered hæmorrhages were present, and there was thrombosis of small arteries and veins particularly in the leptomeninges, and to a lesser degree in the cord. Some vessels showed fibrinoid necrosis and frequent slight leucocytic infiltration of their walls. In postinfectious encephalomyelitis a few small thrombosed vessels are sometimes seen, but not inflammatory changes in the vessel walls of the kind here apparent. A case with very similar pathological changes was described by Brain and Russell (1937) following the administration of a spinal anæsthetic. There was massive softening of the cord extending from T12 to L2, and focal areas of demyelination, not related to hæmorrhages in the higher segments. In the affected areas veins showed endophlebitis or thrombosis, while arteries showed kinds of acute necrosis or "necrotising arteritis." Similar vascular changes have been reported in encephalitis following arsenic injections (Scott and Moore 1928 and Baker 1935), although no destruction of brain tissue was noted.

(3) *Massive softening of the cord* has been described in encephalomyelitis following smallpox (Troup and Hurst 1930), after antirabic inoculations (Babes and

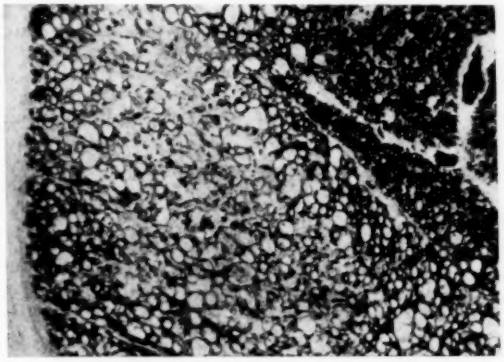

FIG. 3—Thoracic cord. Loyez. Ballooning of myelin sheaths in superficial white matter. (× 75.)

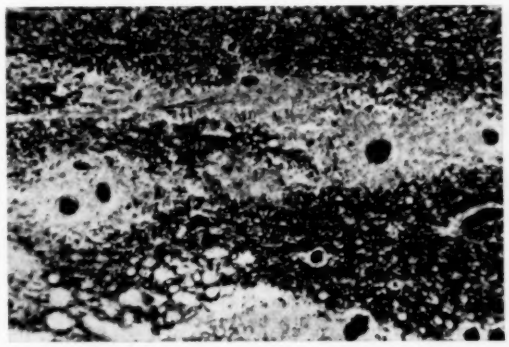

FIG. 4—Thoracic cord. Loyez. Perivascular demyelination in deep white matter. (× 75.)

Mironesco 1908), and after spinal anæsthesia (Brain and Russell 1937, Brock, Bell and Davison 1936).

NOMENCLATURE

The term encephalomyelitis has been used in describing these two cases, but it is not used in any specific sense. The condition found has certain pathological features in common with recognised types of encephalomyelitis, but this does not necessarily mean that the lesions have a similar origin. In defining the alternative term "myelomalacia" Walshe (1937) says that it has been applied to localised softening of the cord secondary to diminished blood-supply, especially due to thrombosis of its blood-vessels, as distinct from local destructions which may result from inflammatory conditions. But such a distinction, he holds, is not justified; for thrombosis and ischæmia are a part of the pathological process of all traumatic, inflammatory and pressure lesions of the spinal cord, and may be terminal events in certain diseases of the cord in which vascular lesions of the cord are otherwise conspicuous by their absence. In my case 1 the inflammatory changes in the vessel walls, and thrombosis of vessels, the perivascular demyelination, and massive softening, may all have been the result of the same damaging agent.

It is possible that the massive softening of the lumbar cord was secondary to vascular occlusion, but similar softening has been reported in encephalomyelitis following smallpox (Troup and Hurst 1930), when no thrombosis of vessels was seen. Again in arsenic encephalitis perivascular demyelination has been described when no thrombosis of vessels was present (Russell 1937), while others (Baker 1935, Scott and Moore 1928) have recorded cases showing vascular damage and thrombosis of vessels but no softening.

TOXICITY OF SULPHANILAMIDE

Very few affections of the central nervous system attributable to sulphanilamide have been reported. Bucy (1937) described a case of toxic optic neuritis apparently to be explained by idiosyncrasy to the drug. A girl with osteomyelitis was given sulphanilamide three times. On the first two occasions she had headache, cyanosis, diarrhœa and a choking sensation, and on the third she developed a toxic optic neuritis after taking a single tablet. Whitby (1937), speaking of the toxicity of sulphonamide preparations, stated that one case where the central nervous system was affected had come to his knowledge. Several cases of neuritis have been described following the administration of Uleron.

Van Valkenburg and Kreuzwendedich von dem Borne (1938) reported a case of polyneuritis developing after 16 g. had been given in two periods with a week's interval.

Alder and Markoff (1938) described two cases of polyneuritis after administration of uleron.

Schubert (1938) reports a case of a man, aged 21, developing extensive softening of several segments of the thoracic cord after the administration of 15 g. of uleron, and later 15 g. of Diseptal B, with six days' rest between the courses. He appeared to be completely cured at the end of the course, and the symptoms of myelitis did not begin until fourteen days later. He had a fall while ski-ing, and sprained his knee. The next day he noticed numbness of the feet and weakness of the knees. It was considered that the fall was probably a factor in precipitating the lesion, but was not wholly responsible for it. The cerebrospinal fluid did not contain any blood, and there was no bony lesion, and nothing was found post mortem to suggest it could have been traumatic in origin. The gonococcal infection appeared to have cleared up completely.

It appears that patients suffering from lupus erythematosus and arthritis, and from acute rheumatism, are especially susceptible to the toxic effects of sulphanilamide.

Barber (1937) reported two cases in women with lupus erythematosus and arthritis. The first developed fever (102° F.) and diarrhœa, after taking 1·0 g. t.d.s. for ten days, and the second developed toxic symptoms after taking 0·5 g. t.d.s. for ten days. After a rest from treatment, another attempt to take the drug immediately provoked the same symptoms. Both patients seem to have become sensitised to the drug.

Swift, Moen and Hirst (1938), after treating 8 cases of rheumatic fever, concluded that its toxic action in this disease outweighs any benefit obtained.

In both my cases the toxic effects, if due to the drug, must be ascribed to idiosyncrasy rather than overdosage. The first patient, with lupus erythematosus and arthritis, had a total of 14 g., and the second, with tonsillitis and erythema nodosum, had 18 g. There is evidence also that the encephalomyelitis following arsphenamine injections is independent of the dosage. Cormia (1936), studying the records of 135 cases in which encephalitis was a sequel to arsenic injections, found that it usually developed after the second injection. It is not due to a Herxheimer reaction, since it has been seen in non-syphilitic subjects (Globus and Ginsberg 1933).

An emulsion of cord from the fatal case was inoculated intracerebrally into a monkey and 2 guineapigs, 2 rabbits and 12 mice, with negative results, and this is in keeping with the fact that encephalomyelitis showing perivascular demyelination has never been transmitted to animals. No known virus causes this pathological picture, and there is at present little to support the theory that the encephalitis is caused by activation of a virus latent in the body.

It is known that certain persons develop unusual reactions after taking small amounts of some drugs. The toxic manifestations they show are not those usually seen in overdosage from the particular drug. The cause of the idiosyncrasy is unknown. Occasionally, the symptoms appear after the first dose, and there seems to be a constitutional factor. Often, however, they come on only after a number of doses, and here sensitisation to the drug seems to have taken place. Once they become sensitised, a minute dose of the drug will bring recurrence of the symptoms. It is possible that the encephalomyelitis following sulphanilamide and arsenic is the result of such a reaction affecting the central nervous system.

The possibility of postinfectious encephalomyelitis being due to sensitisation has been suggested.

Summary

1. Two cases of encephalomyelitis following the administration of sulphanilamide are described, one of which ended fatally. The total doses taken were small (14 g. and 18 g.) and if the drug was responsible the patients must have been more than ordinarily susceptible to it.

2. There is evidence that patients suffering from certain illnesses—including acute rheumatic fever and lupus erythematosus—are especially liable to develop toxic manifestations after taking sulphanilamide.

3. Vascular changes are seen in some cases of encephalomyelitis and their relation to the demyelinating lesions is discussed.

I wish to thank Dr. J. R. Gilmour for his report and for the photomicrographs; Dr. L. T. Bond for performing the post-mortem examination; and Dr. Arthur Burrows, Dr. R. Sleigh Johnson and Dr. T. Rowland Hill for permission to publish the cases. The late Dr. J. R. Perdrau carried out the animal-inoculation experiments.

REFERENCES

Alder, von A., and Markoff, N. (1938) *Schweiz. med. Wschr.* **68**, 560.
Babes, V., and Mironesco, T. (1908) *C.R. Soc. Biol. Paris*, **64**, 964.
Baker, A. B. (1935) *Amer. J. Path.* **11**, 185.
Barber, H. W. (1937) *Brit. med. J.* **2**, 77.
Brain, W. R., and Russell, D. S. (1937) *Proc. R. Soc. Med.* **30**, 80.
Brock, S., Bell, A., and Davison, C. (1936) *J. Amer. med. Ass.* **106**, 441.
Bucy, P. C. (1937) *Ibid*, **109**, 1007.
Cormia, F. E. (1936) *Canad. med. Ass. J.* **35**, 610.
Globus, J. H., and Ginsberg, S. W. (1933) *Arch. Neurol. Psychiat., Chicago*, **30**, 1226.
Russell, D. S. (1937) *J. Path. Bact.* **45**, 357.
Schubert, M. (1938) *Derm. Wschr.* **107**, 1361.
Scott, E., and Moore, R. A. (1928) *Amer. J. Syph.* **12**, 252.
Swift, H. F., Moen, J. K., and Hirst, G. K. (1938) *J. Amer. med. Ass.* **110**, 426.
Troup, A. G., and Hurst, E. W. (1930) *Lancet*, **1**, 566.
Valkenburg, C. T. van, and Kreuzwendedich von dem Borne, G. A. (1938) *Ibid*, **2**, 889.
Walshe, F. M. R. (1937) revising chapter by Collier and Adie in Price's Practice of Medicine, London, p. 1721.
Whitby, L. E. H. (1937) *Lancet*, **1**, 1517.

LOCAL TISSUE ANOXIA AND ITS TREATMENT

WITH SPECIAL REFERENCE TO RHEUMATIC MYOCARDITIS *

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Local Tissue Anoxia

NOTHING is commoner in special pathology than to ascribe to ischæmia from arterial disease the fatty degeneration, necrosis, or fibrosis of organs. Ischæmia presumably acts by producing want of oxygen (local tissue anoxia), and yet no-one has examined this problem systematically by observing the effect of breathing a high concentration of oxygen over a long period, even though benefit might be expected from such treatment in suitable cases. There are three reasons for this omission: (1) The term *local* tissue anoxia implies normal saturation of the arterial blood with oxygen; otherwise all the tissues would be anoxic; the frequent use of the term anoxæmia for this condition has obscured the problem. (2) Until the last few years there has been no convenient method of giving oxygen in high concentration for more than a few hours at a time, and it has been considered inadvisable (Boothby 1938). (3) Most important of all, it has been argued that, because the normal arterial blood is 95 per cent. saturated with oxygen, no good would be obtained by completing the saturation to 100 per cent. One well-known author speaks of anoxæmia as the "kind of oxygen want that is capable of relief by oxygen inhalation," as if the other kind could not be relieved in this way. This is perhaps a fair presentation of the views of clinical workers in this field up to date, though, to judge from a lecture given on May 3, 1939, by Dr. W. Lovelace at Guy's Hospital, some American opinion is fast coming round to the views advocated in this paper.

There are observations proving that breathing oxygen can relieve local anoxia: (1) Campbell and Hill (1931) and Fine et al. (1936) have shown that, when man breathes oxygen, nitrogen is driven out of the body and oxygen must presumably take its place; (2) Campbell (1925), after injecting air beneath the skin and into the peritoneal cavity of animals, found that the partial pressure of oxygen in these collections of gas was increased by breathing oxygen; (3) Behnke et al. (1934) found that under high oxygen-pressure the mixed venous blood contained more oxygen than there was in the arterial blood, when the animal was breathing air, showing that the hæmoglobin had probably undergone no reduction at all as it passed through the systemic circulation, tissue respiration being carried out entirely by means of oxygen in solution; and (4) Krogh (1922) has pointed out mathematically that oxygen consumption in muscle depends on the difference between the capillary oxygen-pressure and the tissue oxygen-pressure and is least in parts removed from open capillaries, where there may be a temporary lack of oxygen. Breathing oxygen must cause a rise in capillary oxygen-pressure and facilitate the absorption of oxygen, as shown by Hill, Long, and Lupton (1924) during muscular work in man and by Hill and Flack (1909), who found that athletes were able to improve their performances. Boothby (1938) has compared the volume of oxygen dissolved in the plasma when the subject breathes oxygen with that combined as oxyhæmoglobin; but volumes do not enter into Krogh's formula. Oxyhæmoglobin is to be looked upon merely as a store from which the body obtains oxygen without too great a fall of partial pressure.

CORONARY THROMBOSIS

Although there has been no systematic study of the use of oxygen in local tissue anoxia, observations are available in three instances: (1) Hill (1921) claimed that there was considerable improvement in two cases of chronic ulcer of the leg with local œdema; (2) it has been suggested that certain drugs—e.g., alcohol and cyanide—act by preventing the cells from absorbing oxygen—"histotoxic anoxia"—and Barach (1934), among others, has shown that oxygen is certainly beneficial in acute alcoholism. While admitting the benefit, some have doubted the anoxic hypothesis which would explain it, and certainly the fall in concentration of alcohol in the blood under oxygen (Robinson and Selesnick 1935) suggests another possible explanation—e.g., an oxidation of the alcohol which is poisoning the cells. It is desirable to obtain further proof that local tissue anoxia can exist.

(3) *Coronary thrombosis.*—Levy and Barach (1930) treated with success four patients in an oxygen tent, and I described benefit in one case (Campbell and Poulton 1934). The rapid cutting off of the arterial supply, the secondary infarction, and the intermixture of blood-clot and injured muscle-fibres from subsequent hæmorrhage all suggest local tissue anoxia, and the deviation of the S–T interval from the iso-electric line in the electrocardiogram (E.C.G.) provides a proof, for this physical sign indicates local want of oxygen (Dietrich and Schwiegk 1933, Büchner 1938). In spite of this, oxygen plays practically no part in the treatment of this condition in this country. It is not mentioned in many textbooks or in discussions at medical societies (*Lancet* 1939). It is because in my experience oxygen is the most valuable drug we possess for coronary thrombosis, improving the heart's action and relieving pain, that these further two cases are described.

CASE 1.—A mess-room attendant, aged 59, had had seizures 12 and 3½ years ago and mild attacks for the last 20 years after hard muscular work. The symptoms were nausea, dizziness, "swelling of the chest" (constriction), sweating, and weakness of the

* A paper read before the Association of Physicians.

legs. On the present occasion he staggered to a bench and lay down, remaining conscious.

On admission to Guy's Hospital under Dr. R. T. Grant at 1 P.M. on Nov. 25, 1938, there was pain in the chest and a sense of dissolution; the radial pulses and apex-beat were impalpable; the heart-rate was 130 and the heart's action irregular. By 1.40 P.M. he was in a tent with 75 per cent. oxygen. When examined at 11.15 P.M. he was better, the heart-rate was 80, and the radial pulse was just palpable; blood-pressure 100/81, rising to 120/70 on the 27th and 140/90 on the 29th, when the tent was removed. There was a polymorphonuclear leucocytosis and variations in the P and T waves of the E.C.G. indicating coronary thrombosis. There was no S–T deviation, possibly because he was immediately treated with a high concentration of oxygen. He was discharged on Dec. 20.

CASE 2.—A lady, aged 82, had had a severe attack of what was evidently coronary thrombosis in about 1912 and anginal pains for the last two or three years, especially when walking against a wind. There were two severe attacks at night on Oct. 1 and 14, 1938. On the 16th the blood-pressure was 170/110. On the 23rd at 10 A.M. she had a severe attack of pain and was pulseless, and immediate death was feared. She was in a tent with 45–50 per cent. oxygen by 5 P.M. and stayed there for the night. She improved, her blood-pressure being 105/70. On the 24th the E.C.G. showed S–T deviation, most marked in lead 3, which was much less on Nov. 3. The other changes were compatible with the diagnosis.

For the next six months she had oxygen, mostly at night, with a tent or forked nasal tube. Its effect in raising the blood-pressure and relieving pain was observed many times. In February, 1939, the blood-pressure varied between 100/75 and 145/95, according as oxygen was given. In the day-time she led the life of an invalid but was wheeled out of doors and went for drives. The value of the tent over the forked tube was illustrated by her last severe attack of pain twelve hours before she died. She was unconscious, dyspnœic, and cyanosed after morphine, in spite of a flow of oxygen at 6 litres and later 8 litres a minute. As soon as the tent was applied with 70 per cent. oxygen, she became conscious and then had natural sleep for about six hours. According to present experience a higher concentration of oxygen and a longer continuous period in the tent at the outset are indicated.

LOCAL CEREBRAL ANOXIA

It will be evident, from what has been said so far, that local tissue anoxia may play an important part in clinical medicine, and its treatment with an "airtight" tent may produce on occasions brilliant results. The airtightness of the tent must be emphasised not only because oxygen is economised but also because a constant high percentage is more readily obtained. It would serve no useful purpose merely to enumerate those diseases in which on theoretical grounds this treatment might prove to be of value, without producing experimental evidence; this is a subject for future investigation. However, there is one condition I must mention before approaching the main subject of this paper. If coronary thrombosis causes local anoxia of the heart muscle, will not cerebral hæmorrhage, thrombosis, or embolism produce local anoxia of the brain, particularly since it is now recognised that the central nervous system has a high basal requirement of oxygen? So far I have treated half a dozen cases. More are necessary for the purpose of estimating the prognosis, with and without oxygen; but two of the cases show points in its favour.

CASE 3.—A girl in the Downs Hospital, aged 12, with rheumatic heart disease, had a sudden attack of aphasia and hemiplegia, which remained unchanged for four days, after which an oxygen tent was used; two days later improvement in speech was noticed, which continued in the tent.

CASE 4.—A fish-porter, aged 39, was admitted to Guy's Hospital on Sept. 28, 1938, semiconscious, with right hemiparesis; blood-pressure 210/130. He gradually became unconscious, and the paralysis increased till on the 30th he lay like a log. At 6 P.M. an oxygen tent (60–70 per cent.) was used. The next morning he came round sufficiently to want to sit up and could answer "yes" and "no." Incontinence was noticed. On Oct. 3 he was fully conscious and could move his right arm and leg. The oxygen was lowered to 40–50 per cent. at 5 P.M. The next day he was taken out of the tent; he could talk normally, the right side of his face was weak, but improved, and he was still doubly incontinent. He remained in statu quo till the night of the 19th, when he became worse. He had difficulty in speaking at 8 A.M. on the 20th and was restless and unconscious in the afternoon, when he was put back in the tent. He died at 6.45 A.M. on the 21st, and at autopsy there was a black organising clot obliterating the left internal capsule and no recent hæmorrhage. The improvement with oxygen, after the progress downhill during the first three days in bed, and the relapse from the effect of the original hæmorrhage fifteen days after removal of the tent both suggest that oxygen was valuable but was not used long enough.

Rheumatic Myocarditis

The points in favour of a local tissue anoxia in rheumatic myocarditis are as follows:—

(1) The histological picture of Aschoff node formation in the myocardium, so often described, has been epitomised as a panarteritis with thrombosis of the lumen in places and peri-arterial fibrosis (Gadrat 1938). Associated with this there is cloudy swelling, diffuse or in patches, later fatty metamorphosis of the muscle cells, and latest of all a dystrophic change, seen best in the auricular wall in mitral stenosis, where the muscle substance disappears, leaving a delicate web of sarcolemma. Coombs (1924), who described these changes, ascribed them to inflammatory toxins; but why should not they be due to anoxia secondary to the panarteritis?

(2) Asphyxia in cats causes lengthening of the P–R interval, missed beats, and 2 to 1 heart-block (Lewis 1925), conditions met with clinically in acute rheumatism, and recently the S–T deviation from the iso-electric line, which is also commonly met with in acute rheumatism, has been attributed to want of oxygen (Dietrich and Schwiegk 1933, Büchner 1938).

(3) Repeated small blood-transfusions are beneficial in rheumatic myocarditis (Horvath 1938), and these would increase the supply of oxygen in a disease characterised by a low hæmoglobin percentage.

LACTIC ACID

If there is anoxia of the heart muscle, an increased production of lactic acid would be anticipated. This might show itself in an increase of the blood lactic acid and/or of the amount excreted. An investigation took place at the Birmingham Children's Hospital, and Dr. E. M. Hickmans, biochemist to the hospital, has kindly allowed me to quote some of the conclusions. The patients were afebrile and in bed; 94 estimations of blood lactic acid at about 10 A.M. in rheumatic cases and 62 in controls were made by Friedmann's method and 26 in rheumatic cases and 11 in controls by the method of Avery and Hastings. The lactic acid of the urine was determined 103 times in rheumatics and 68 times in controls, usually for a period of twelve hours. The average percentage of lactic acid in the blood by both methods and in the

urine excreted in twelve hours and the range (highest and lowest figures) were the same in the two groups; but the distribution curves differed. There were more high and low values for the blood lactic acid in the rheumatic series than in the controls. There were also more high values for the excretion of lactic acid in the rheumatics than in the controls. There was therefore a difference in the metabolism of lactic acid in the two groups, which might be explained by an increased production of acid in some cases of acute rheumatism.

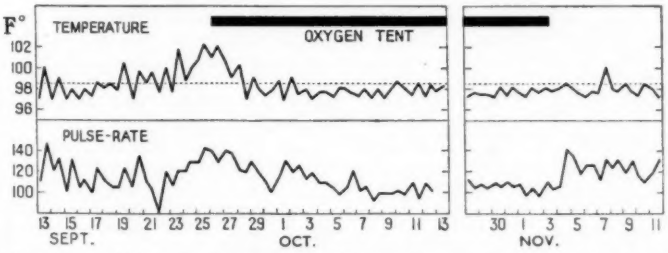

FIG. 1—Fall of temperature and pulse-rate in oxygen tent in a case of acute rheumatism with rise on coming out.

A further investigation on the effect of oxygen on the metabolism of lactic acid is now being carried out in London, and Mr. H. J. Taylor, Ph.D., working on behalf of the Empire Rheumatism Campaign, is kindly collaborating with me. He has allowed me to quote the following typical case:—

CASE 5.—A man, aged 39, was admitted to Lewisham Hospital on March 9, 1939, with acute rheumatism, pleurisy, and pericarditis. The anti-streptolysin titre was 1250—ten times the normal. There was a considerable fall in blood lactic acid while the patient was in the tent—i.e., from 19·2 mg. to 9·0 mg. per 100 c.cm.—and a considerable rise on the day after coming out—i.e., to 23·1 mg.—when the pulse-rate and temperature were above normal, with a gradual fall later on.

This suggests that the oxygen relieved the local anoxia of the heart muscle. As might be predicted from the work in Birmingham, such striking changes do not take place in all cases of rheumatic myocarditis; nor are they present in the controls.

OXYGEN THERAPY

The remainder of this report is based on a study of 26 * rheumatic patients (15 in their first attack), treated with oxygen for periods varying from about a week up to eighty-two days, at Guy's Hospital, Lewisham Hospital, Queen Mary's Hospital, Carshalton, and the Downs Hospital, Sutton. The attempt was made to keep the oxygen percentage in the tent at 60–70; this could not be effected in a leaky tent. The patient usually remained in the tent continuously; but after two or three weeks some patients were allowed out once a day for an hour to prevent boredom. In wards where the technique was unfamiliar the patients came out twice a day for washing. A control series of 33 cases of acute rheumatism (17 of them in their first attack) is available for comparison; these cases were mostly at Queen Mary's Hospital. In 17 out of 19 cases treated with oxygen the anti-streptolysins of the blood were abnormally high, emphasising the relationship of acute rheumatism to the hæmolytic streptococcus.

Subjective clinical condition.—In 17 of the 26 cases clinical improvement was noticed. The patients felt better; they were more active and ate more, and cyanosis disappeared; one could "breathe better." The improvement was most obvious in very ill patients, such as one with pericarditis, nephritis, and purpura, who was so ill that a note was made that oxygen had probably saved his life; another who had made but little recovery from a pericarditis; and another with pneumonia and pericarditis. All these were children. Improvement was noticed whether the acute rheumatism was a first attack or accompanied by an old-standing cardiac lesion. Adult patients also felt better—e.g., one with purpura and pleurisy besides an old mitral stenosis; one with pericarditis, pneumonia, and nephritis; and one with pleurisy and pericarditis.

In 8 cases there was no clear subjective improvement: 4 patients did not feel unwell beforehand. Another patient, who developed tachycardia after tonsillectomy fifty-three days previously, did not respond and only showed a temporary fall of pulse-rate. Another patient's appetite failed, though there was a favourable effect on the pulse and he was taken out after fifteen days. Two patients had severe heart-failure. Barach and Richards (1931) noticed that oxygen did not cause much improvement in this type of case, though one of their patients collapsed after removal from the tent and had to be put back.

This distinction was noted in a case in which an enlarged cardiac shadow indicated pericarditis. On Aug. 6, 1938, at Guy's Hospital, the patient did well in the tent, but the value of prolonged treatment was not realised, and he was taken out after two days. Two and a

* A further description of these cases in tabular form will be sent on application to the author.

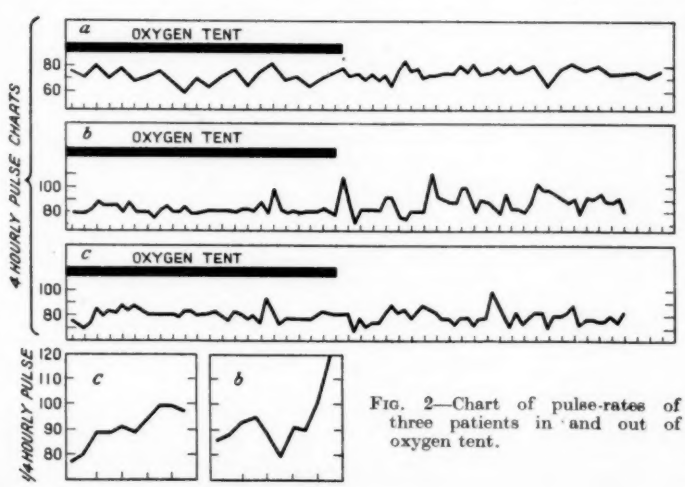

FIG. 2—Chart of pulse-rates of three patients in and out of oxygen tent.

half months later, at Queen Mary's Hospital, he was put in the tent for thirty-five days; there was massive œdema, scanty urine, and an enlarged liver; he died soon after coming out. Hence oxygen should not be left till the last stages of rheumatic heart disease. In 2 cases without pericarditis radiograms showed that the width of the heart became smaller after treatment with oxygen.

Temperature and pulse-rate.—In 14 cases there was no fever at the time the tent was used, though in most cases there had been recent fever. Fever was present in 12 patients, and all reacted with a fall of temperature in the tent, though in 2 the fall was slight. A striking example is illustrated in fig. 1. Salicylates and sulphanilamide, which might cause a fall of temperature, were not given in 8 of the 12 cases. In some the temperature rose again on removal of the tent, and it may rise again before the tent is removed. The temperature falls in pneumonia when a patient is at first treated in a tent, though it usually rises again later. This fall of temperature in two unrelated diseases suggests that tissue anoxia may be a factor in the formation of metabolic products responsible for fever.

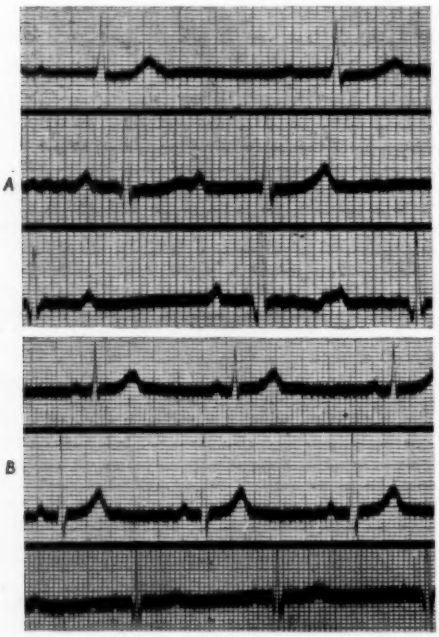

FIG. 3—Electrocardiograms in a case of acute rheumatism: (A) 29.xii.38, showing 2 to 1 heart-block and fall of S–T in lead 1 slightly below the iso-electric line; (B) 3.i.39, heart-block and S–T deviation have disappeared.

A fall of pulse-rate was not brought about so readily as a fall of temperature (fig. 1), but it was observed in 22 cases, though in some the fall was slight. In 18 cases the pulse-rate rose on removal of the tent. The rise in 2 mild cases is shown in fig. 2*b* and *c*; it began within an hour of leaving the tent. After this rise the pulse-rate may settle down again to a normal figure in the course of a week or so. In 1 case there was little or no rise of pulse-rate when the tent was removed (fig. 2*a*). Presumably the treatment had been carried out long enough in this case.

Alteration of murmurs with oxygen treatment was noted in 15 cases—11 with a first attack and 4 of old standing: (1) there was a diminution of intensity or a disappearance of a systolic and/or mid-diastolic murmur in the tent in 10 cases, and reappearance with increased intensity outside the tent; (2) the first sound became louder in the tent; and (3) the quality of murmurs changed. For instance, a systolic squeak disappeared, though it became faintly audible on occasions later on, while the patient was still in the tent. There was also a temporary disappearance of a squeak in 1 case during the second treatment.

In 10 cases no change was noted. In 4 the murmurs were either very soft or absent; 5 were of old standing, and in 1 pericardial sounds overshadowed the murmurs.

Electrocardiograms.—More than one E.C.G. and sometimes serial E.C.G.s were taken in 18 cases. Only occasionally was the E.C.G. taken with the patient in the tent; this is not so important, for the effect of the oxygen probably lasts some time after the patient's removal from the tent; at any rate there is not much rise in pulse-rate for half an hour. E.C.G.s were taken, unrelated to oxygen treatment, in a control series of 27 rheumatic cases.

The rheumatic patients treated with oxygen and the controls showed improvement in the same proportion so far as low voltage was concerned; but this sign is rather uncertain, for it is readily produced by drying of the electrodes. There was frequently slight deviation of the S–T interval, which is taken to mean local want of oxygen (fig. 3*a*). It was always much less than that commonly observed in coronary thrombosis or in old-standing myocardial disease. In all the 4 cases in which it was present it improved with oxygen, and in only 3 out of the 16 cases of the control series in which it was present. One case showed slurring of the S wave, which became normal after five days in oxygen. The change from upright to inverted T waves and vice versa took place in 12 per cent. of patients treated with oxygen and in 30 per cent. of control cases during the period of observation.

In 16 cases treated with oxygen the P–R intervals could be compared. A length up to 0·18 sec. has been allowed as normal for a child and 0·20 sec. for an adult. In 8 cases the interval was normal. In 6 it was long and became normal with treatment. One of these patients, just before going into the tent, had classical 2 to 1 heart-block with increasing P–R interval and pulsus bigeminus (fig. 3*a*). Five days later, in oxygen, a normal P–R interval was obtained (fig. 3*b*). The pulse was regular and normal in rate three days after going into the tent; hence the heart-block may have disappeared by then. In 2 cases the P–R interval was long and became normal; but on one occasion in each case lengthening was again observed. Both of these patients have so far done well clinically. A study of the P–R interval was possible in 17 control cases. It was normal in 7 cases. In 6 it was too long, and in only 2 of these did it become normal—a contrast to the cases treated with oxygen. In 4 cases it was variable, lengthening and shortening at different times. The conclusion is that oxygen produces improvement in the electrocardiogram.

Later improvement with oxygen treatment.—For this assessment it is better to avoid cases with permanent cardiac damage but to consider patients in their first attack, in which improvement or recovery is more

likely. As the time since oxygen treatment is short —two to ten months (average four and a half)—the conclusions are provisional. Only 7 of the 15 cases in their first attack are available, as in the others the time of observation since treatment has been shorter than two months. The result is considered to be good if (1) only a soft systolic murmur was present before treatment and this has disappeared; or (2) a canter rhythm or diastolic or presystolic murmur or a third or fourth heart sound (McKee 1938) or a loud blowing or musical systolic murmur with a weak first sound has disappeared and the only auscultatory signs remaining are a soft systolic murmur with a good first sound and/or an accentuated and sometimes reduplicated pulmonary second sound, the reduplication being usually heard towards the end of inspiration; or (3) a pulse-rate previously rapid now remains normal not merely as charted but also when the physician examines the patient. With these criteria the results in 6 of the 7 cases are good. The seventh patient, who was only in the tent thirteen days, has a rapid pulse-rate with a systolic murmur after two and a half months—a poor result. These were all severe cases when first treated, and the time in the tent was too short in 2 cases. One patient, who writes happily from Eire and wants to come back as wardmaid at Guy's Hospital, is not included in this series.

A control series of 16 cases at Queen Mary's Hospital observed over the same period tells a different story. In 2 patients with systolic murmurs the cardiac condition cleared up in less than a month in one and in eleven weeks in the other. Another patient began with nodal rhythm, ventricular escape, and presystolic and systolic murmurs; after two months there were a systolic murmur and good first sound, and the pulmonary second sound reduplicated on inspiration. These 3 results are good. The remaining 13 are poor: in 2 soft systolics appeared and have persisted for nearly nine months in one and over two months in the other; and in 2 there were loud systolic murmurs and weak first sounds; in 5 there remained mid-diastolic murmurs or their equivalents; in 2 there remained aortic diastolic murmurs; and in 2 there was tachycardia, with a late blowing systolic in one. Most of the patients treated with oxygen were more acutely ill than the controls; this is also suggested by the anti-streptolysin titres, which were on the average 630 and 268 in the two series. The numbers are small, and this section should only be looked on as an appendix to the rest of the paper; but the number of good results is so different in the two series that oxygen may have made a difference to the prognosis. Further work along these lines is required.

Conclusions

(1) The importance of local tissue anoxia and its treatment with oxygen has not hitherto been recognised, except that success has been claimed for oxygen therapy in varicose ulcer with local œdema, poisoning with alcohol, and coronary thrombosis.

(2) The inhalation of a high percentage of oxygen may have a wide application in treatment; its use in cerebral hæmorrhage, thrombosis, and embolism is suggested.

(3) The evidence that there is local anoxia in rheumatic myocarditis is (*a*) a changed lactic-acid metabolism, and (*b*) clinical improvement on treating patients with oxygen, resulting in fall of temperature and pulse-rate, alteration of murmurs, diminution in the size of the heart, and electrocardiographic changes. Oxygen treatment in early cases appears to be of permanent benefit, but in this connexion further observations are required.

I wish to thank Sir Frederick Menzies for allowing me to quote cases at L.C.C. hospitals; Mr. E. M. Hickmans, Ph.D., and Drs. N. Gray Hill, George Melton and E. W. Todd for their coöperation; and the Medical Research Council for an expenses grant.

REFERENCES

Barach, A. L. (1934) *Amer. J. Physiol.* **107**, 610.
— and Richards, D. W., jun. (1931) *Arch. intern. Med.* **48**, 325.
Behnke, A. R., et al. (1934) *Amer. J. Physiol.* **107**, 13.
Boothby, W. M. (1938) *Proc. Mayo Clin.* **13**, 641.
Büchner, R. (1938) *Klin. Wschr.* **17**, 1713, 1745.
Campbell, J. A. (1925) *J. Physiol.* **60**, 20.
— and Hill, L. (1931) *Ibid*, **71**, 309.
— and Poulton, E. P. (1934) Oxygen and Carbon Dioxide Therapy, 2nd ed., London.
Coombs, C. F. (1924) Rheumatic Heart Disease, Bristol, pp. 52, 55.
Dietrich, S., and Schwiegk, H. (1933) *Z. klin. Med.* **125**, 195.
Fine, J., Banks, B. M., Sears, J. B., and Hermanson, L. (1936) *Ann. Surg.* **103**, 375.
Gadrat, J. (1938) *Ann. Anat. path. méd.-chir.* **15**, 517.
Hill, A. V., Long, C. N. H., and Lupton, H. (1924) *Proc. roy. Soc.* B, **97**, 161.
Hill, L. (1921) *J. Physiol.* **55**, P.20.
— and Flack, M. (1909) *Ibid*, **38**, P.28.
Horvath, B. (1938) *Int. Congr. Rheum. Hydrol.* p. 158.
Krogh, A. (1922) Anatomy and Physiology of Capillaries, London, p. 198.
Lancet (1939) March 18, p. 634.
Levy, R. L., and Barach, A. L. (1930) *J. Amer. med. Ass.* **94**, 1363.
Lewis, T. (1925) Mechanism and Graphic Registration of the Heart Beat, Chicago, p. 172.
McKee, M. H. (1938) *Amer. Heart J.* **16**, 79.
Robinson, L. J., and Selesnick, S. (1935) *J. Amer. med. Ass.* **105**, 1734.

TESTS FOR ATHLETIC EFFICIENCY*

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THE subject of physical fitness is very much in the air. The Government has considered it desirable to institute an elaborate investigation. Our profession will naturally be consulted; our opinion will frequently be requested; on very rare occasions it may even be paid for. That is my excuse for bringing forward so elementary a communication.

I have to restrict myself to a very limited aspect of the subject. Physical fitness and athletic efficiency are not by any means the same thing. Fitness I conceive to be satisfactory adjustment to one's environment, the term being used in the widest sense. A man may be fit to climb the Matterhorn yet quite unfit to endure the strain of city life; fit to row from Putney to Mortlake yet quite unfit to undertake the duties of a resident in a fever hospital. And clearly the reverse also holds good. The assumption of "fitness" involves a number of factors, some of which cannot be assessed at all. So I restrict myself to the subject of athletic efficiency, which is to some extent at any rate directly measureable.

RESPONSE OF CIRCULATION TO EFFORT

For practical purposes the comparatively simple methods in common use to estimate the physical efficiency of the healthy athlete are probably as satisfactory as the more elaborate investigations, which are, after all, only extensions of fundamental principles. In general we depend on the response of the circulation to effort, as denoted by cardiac acceleration or by variation in blood-

* A paper read before the Association of Physicians.

CRAMPTON'S TABLE OF NUMERICAL STANDARDS OF FITNESS

Pulse-rate increase	Systolic blood-pressure (mm.)										
	Increase						Decrease				
	10	8	6	4	2	0	2	4	6	8	10
0– 4	100	95	90	85	80	75	70	65	60	55	50
5– 8	95	90	85	80	75	70	65	60	55	50	45
9–12	90	85	80	75	70	65	60	55	50	45	40
13–16	85	80	75	70	65	60	55	50	45	40	35
17–20	80	75	70	65	60	55	50	45	40	35	30
21–24	75	70	65	60	55	50	45	40	35	30	25
25–28	70	65	60	55	50	45	40	35	30	25	20
29–32	65	60	55	50	45	40	35	30	25	20	15
33–36	60	55	50	45	40	35	30	25	20	15	10
37–40	55	50	45	40	35	30	25	20	15	10	5
41–44	50	45	40	35	30	25	20	15	10	5	0

pressure; and since the reaction of the vasomotor system is the essential criterion, it may be regarded as sufficient to ascertain the alterations which occur in changing from the horizontal to the vertical position, even if effort is entirely eliminated by strapping the subject to a tilting table. In a fit subject the vasomotor system quickly adjusts itself, and the increased vasomotor tone is demonstrated by a small rise in blood-pressure; in the unfit the veins fill first and the cardiac rate accelerates by way of compensation for the sudden fall in arterial pressure—doubtless a carotid-sinus reflex.

C. Ward Crampton has constructed a table which gives a numerical standard of fitness based on this change of posture (see the accompanying table). A perfectly efficient circulation would be denoted by the 100 mark; at 0, unconsciousness would result on the assumption of the erect attitude.

On the whole, I believe any method into which blood-pressure estimations enter to be fallacious. The influence of emotion is often considerable in the highly sensitive nervous type not infrequently encountered among track athletes.

40 MILLIMETRE TEST

The "40 millimetre test" is particularly favoured by the Royal Air Force Medical Service. In this test the subject sits with his nasal respiration occluded with a clamp, and, by expiring through a suitable mouth-piece, sustains a column of mercury at the height of 40 mm. so long as he is able. Meanwhile the observer takes the pulse-rate during each succeeding period of five seconds. In a satisfactory test the pulse-rate remains almost unaltered for a minute or longer; in bad results the duration is brief and the pulse-rate fluctuates. It is not exactly clear what is actually tested. One explanation is that tone of the abdominal walls is the important factor; another supposes that positive pressure on the thoracic contents impedes diastolic filling, and that the state of the ventricular wall is thus tested. Yet I doubt if the ventricular musculature has anything to do with it—I am considering, of course, the athlete in whom pathological changes are presumably absent. Probably anoxia resulting from deficient circulation is the essential factor; and, as we know, people differ enormously in their reaction to anoxia.

In my experience with athletes this test is of little if any value: the fittest men sometimes exhibit extremely bad results, and good results are often encountered in subjects who are not particularly athletic, however suitable they may be as aviators. I am reminded, however, by the Air Force authorities that the test is far from foolproof; it requires practice by the subject and some experience and skill on the part of the observer to produce a legitimate result. With a little practice and proper coöperation between subject and observer repetition of the test may lead to such a degree of improvement as to prove how much depends on technique in its performance.

DECELERATION

The relation of the cardiac rate to exercise is so obvious a criterion, and its investigation is so simple, that it must naturally make the strongest appeal as a test of efficiency. It must be remembered that, although the heart looms largely as a superlative factor in exercise (in my opinion far too largely), it is only one of the elements concerned in a problem into which also enter the lungs, the blood, the skeletal muscles, the skin, and the nervous system (including the higher centres), besides a coördinating factor which is probably within the province of the biochemist. But, since the object is to estimate physical efficiency in the healthy subject, the isolation of any one factor is of no importance.

Any method which provides a form of muscular exertion may be utilised as a system of graduated exercise to afford a measure of the work done and the stress imposed. Among methods in common use are the lifting of a weight through a measured distance a prescribed number of times, and the use of a pulley for the same purpose. Again, the subject may run up and down a flight of stairs in an approximately fixed time, step on and off a chair of standard height at a given rate, raise and lower the arms, bend the trunk, or pedal a stationary bicycle. It is a pity that those of us who are interested in tests of efficiency have not agreed on a standard effort. At present each of us employs his own method, so that results are not comparable. I am considering in this connexion only perfectly healthy subjects, and to estimate this condition of training I apply as violent an effort as I have been able to devise to occupy twenty seconds. The degree of cardiac acceleration I do not consider to be of any great consequence; for, after all, cardiac output may be increased in one subject mainly by acceleration and in another by increasing the stroke volume. But the rate of deceleration I believe to be a valuable index of fitness. As a rule, deceleration begins within 10–15 sec. of the cessation of exercise and continues regularly with

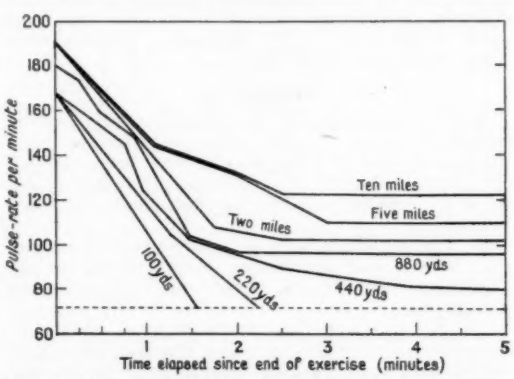

FIG. 1—Graphs showing swift deceleration after running short distances.

a return to the resting rate within 45 sec. But in a few outstanding examples, of whom the leading British runner of the present day is one, a different result has been noted: the tachycardia persists for approximately ½ min. and suddenly yields to the resting rate. It seems as if the circulatory system works on two gears, so to speak. There must be some "clicking over" of a nervous regulatory mechanism, but I cannot find a satisfactory physiological explanation. This simple test I have found to be an adequate guide to fitness during training; a bad result encourages a search for the cause, usually a toxin. Incidentally, I may say I am appalled at the carelessness of the average athlete in elementary hygiene (septic teeth and tonsils, neglect of the bowels, boils, and various skin eruptions).

A striking example was a recent champion quarter-miler. Although occasionally brilliant his form was erratic, and I found corresponding variations in this exercise-tolerance test. The only physical disability identified was pruritus ani, for which he had undergone much treatment, including Ball's operation. A surgical colleague discovered an intermittent discharge from a congenital fistula. Apparently, occlusion from time to time led to absorption of septic and toxic

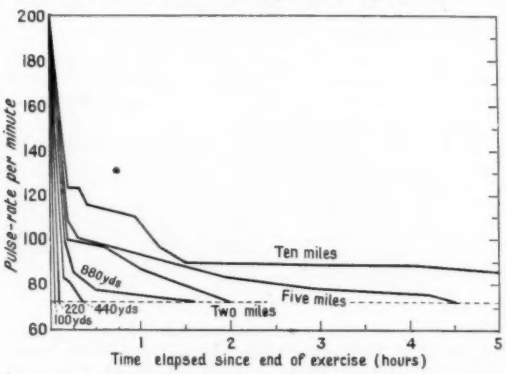

FIG. 2—Deceleration after running distances from 100 yards to 10 miles.

material, and a free discharge to discomfort but to relative athletic fitness. After appropriate surgical treatment the exercise-tolerance test at once became satisfactory and constant, and correspondingly his efficiency was practically demonstrated by a record performance.

RUNNING TEST

Now, although the various efforts mentioned are satisfactory for a short experiment, their psychical value is exceedingly low: in their continued performance boredom rapidly ensues, and they are not applicable beyond a comparatively short duration. To extend this physiological investigation to any desired extent I selected the exercise of running. Granted a constant velocity, it remained only to run over a series of measured distances to obtain a mathematical representation of the exercise taken. An experienced runner can develop an automaticity which within his natural limits is almost perfect. I have seen a good middle-distance runner undertake to complete three miles in 15 min. and exactly achieve this performance with a variation of not more than ⅔ sec. in each quarter-mile.

In my own case many tests under differing conditions led to the conclusion that—at the time during which the observations were made; not, alas, at the present day—my automaticity provided no greater error than 0·8 per cent. over a maximal distance of ten

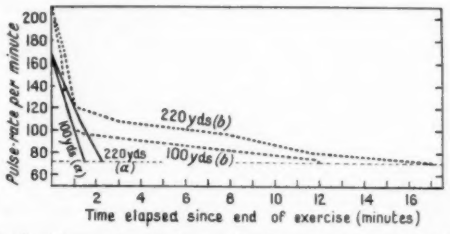

FIG. 3—Comparison between fixed automatic rate (*a*) and extreme effort (*b*) of running.

miles at a rate of 6 min. 23 sec. for each mile (9⅖ miles in the hour). With this speed as the fixed rate, such orthodox distances were run as 100 yards, 220 yards, quarter, half, and one mile, two, five and ten miles; and observations of the pulse-rate were taken.

Two assistants were employed, one to count the pulse and report at the end of every 5 sec. to his colleague, who noted the figures. The fall in rate is so rapid (fig. 1) during the first 2 min. that such brief intervals must not be exceeded; afterwards it suffices to count for 15 sec. every ½ min., then every alternate ½ min. and later for 1 min. every 5 min., until during the protracted observations following the long runs the pulse-rate is noted at half-hourly intervals.

Fig. 1 shows that, whatever the duration of the exertion, the rate of immediate deceleration is always very rapid. After the shortest effort—100 yards—the resting rate has already been reached after only 1½ min. rest, and even in the case of the ten-miles run a substantial reduction can by this time be noted. As the duration of the exercise increases, the return to the resting rate becomes correspondingly prolonged. Thus, in regard to the ten-miles run, although the pulse-rate has fallen to 95 at the end of 1½ hours (fig. 2), it is not until another 7½ hours has elapsed that the normal is reached.

As a supplementary experiment these results may be compared with those obtained after extreme exertion. The application of this experiment is necessarily limited, for no man can be expected to put forth the extreme effort of which he is capable over more than a certain range, depending partly on his natural ability and partly on his athletic experience. In my case, half a mile was the limit; but, since for scientific observation it was impossible to repeat such experiments upon many occasions, results are appended corresponding only to the distances of 100 and 220 yards.

In fig. 3 a comparison between the fixed automatic rate (*a*) and the extreme effort (*b*) is shown, and from these it becomes evident that deceleration of cardiac rate is no absolute guide, inasmuch as the severity of running a furlong at full speed, as judged subjectively by the sense of exhaustion and distress, is greater than that experienced after a run of several miles at the slow automatic rate. Delayed deceleration, then, is related to duration of exercise which in some way must lead to a block upon vagus inhibition, unless it is of purely cardiac origin—exhaustion of its glycogen supply, for example, with subsequent functional disability

THE SUPER-ATHLETE

Finally, a word on the super-athlete. It is natural to desire to identify some factor which makes for supremacy; it is only to be expected, however,

that any such search will be disappointing. After all, although the objective superiority on the track of the super-man (the Olympic champion) over the generally accepted "first-class" athlete is very striking, numerically considered it amounts to only perhaps 4 per cent. Such a difference, if depending on anatomical conformation making for better leverage, would be outside the range of accurate measurement; furthermore, the difference might be some tiny superiority in muscle chemistry or other biochemical factor. When all is said and done, it is a question of coördination of all the various factors working in harmony. Even so mechanical a structure as a motor engine presents the same problem: the perfect chassis is produced when all the parts concerned in locomotion are exactly right at the right moment. And when, as in the case of the human machine, vital phenomena are added, it is not remarkable that no one outstanding criterion can be identified.

SUMMARY

(1) Athletic efficiency is usually tested by the response of the circulation to effort or to other factors influencing cardiac acceleration or blood-pressure.

(2) Every test involving blood-pressure is fallacious, because of the emotional factor.

(3) The rate of cardiac *deceleration* after a short intense effort is a valuable index of athletic fitness.

(4) For investigation of the effect of prolonged effort, the ordinary tests are impracticable. Running various distances is suggested as a more satisfactory method, and examples of its application are given.

BIOLOGICAL EFFECTS OF THE SYNTHETIC ŒSTROGEN HEXŒSTROL

4 : 4′-DIHYDROXY-γ : δ-DIPHENYL-*n*-HEXANE

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THE œstrogenic activity of the synthetic substance 4 : 4′-dihydroxy-γ : δ-diphenyl-*n*-hexane (hexœstrol) has been described by Campbell, Dodds, and Lawson (1938). They found that doses of 0·15 μg. administered to ovariectomised rats gave an œstrus response in 60 per cent. of animals, whereas a dose of 0·1 μg. gave a 20 per cent. response. It appeared that this substance, therefore, was more active than either diethylstilbœstrol (Dodds, Lawson, and Noble 1938) or 4 : 4′-dihydroxy-γ : δ-diphenyl-β : δ-hexadiene (Dodds, Golberg, Lawson, and Robinson 1938) in producing vaginal œstrus. In the present paper the œstrogenic activity of hexœstrol has been compared with these other substances and its general biological effects have been studied.

BIOLOGICAL ACTION

Rabbit uterus.—The action of hexœstrol on the uterus was determined in ovariectomised rabbits. It was found that 100 μg. of this substance given over seven days sensitised the uterus so that subsequent injections of progesterone were followed by typical uterine proliferation. Hexœstrol in large doses (10 mg.) caused uterine hypertrophy without proliferation of the mucosa.

Mammary growth.—Male guineapigs about 200 g. in weight were injected subcutaneously every other day for twenty days. The total dose of hexœstrol was 200 μg. Growth of the nipples and development of the mammary tissue were observed.

Anti-implantation.—It was previously shown that stilbœstrol would effectively prevent implantation of the embryo in rats (Parkes, Dodds, and Noble 1938). The hexœstrol was tested, therefore, in a similar manner. Female rats were allowed to mate, as shown by the vaginal plug, and on the following three days received various doses of hexœstrol in oil by mouth. The total dose and the effect on implantation are shown in table I. A total dose of

TABLE I—EFFECT OF HEXŒSTROL ON IMPLANTATION

No. of rats.	Total dose of (hexœstrol μg.)	Pregnancies
10	0	9
5	1	5
5	10	2
5	25	1

25 μg. of hexœstrol prevented pregnancy in 4 out of 5 animals, and 10 μg. was effective in 3 out of 5 rats. This substance, therefore, appears to be as equally effective by mouth in preventing implantation in the rat as was stilbœstrol.

Other effects.—In preliminary experiments hexœstrol was found to produce effects similar to those produced by stilbœstrol (Noble 1938) when administered to rats for twenty-eight days. These were characterised by a reduction of body growth in adult rats and by a severe atrophy of the gonads with a secondary atrophy of the accessory organs in the male.

ŒSTROGENIC ACTIVITY

Immature rat uterus.—Immature female rats weighing 40–45 g. received subcutaneous injections twice daily for three days and were killed on the fifth day. The synthetic œstrogens were made up in alcoholic solution and diluted with water to the required concentration. At autopsy the uteri were dissected and fixed in Bouin's solution and later weighed after removal from a 70 per cent. solution of alcohol. The results obtained with stilbœstrol and hexœstrol are shown in table II. Although the

TABLE II—COMPARISON OF ŒSTROGENIC ACTIVITY OF HEXŒSTROL AND STILBŒSTROL ON IMMATURE RAT UTERUS

Substance	No. of rats	Total dose (μg.)	Vagina	Average weight of uterus (mg.)
Nil	5	0	Closed	26·2
Stilbœstrol	5	0·05	Closed	41·3
	5	0·1	"	68·8
	5	0·5	4 open	147·6
Hexœstrol	5	0·05	Closed	71·0
	5	0·1	"	77·0
	5	0·5	3 open	129·4

number of rats used was small, it is apparent that there was no great difference in the activities of the two synthetic œstrogens.

Vaginal œstrus.—Ovariectomised adult rats were used for assay purposes. The subcutaneous injections

were given twice daily for three days, and aqueous solutions were used throughout. A positive-œstrus vaginal smear was considered to be one composed exclusively of keratinised cells. The animals received an active substance every two weeks. One batch of 60 rats were used to compare the activity of stilbœstrol with œstrone and the hexadiene substance (4 : 4′-dihydroxy-γ : δ-diphenyl-β : δ-hexadiene). In another batch of 30 animals the activity of stilbœstrol and hexœstrol was determined. The results and the calculated number of international units per g. are listed in table III, which shows that hexœstrol is the most active substance, being 2·8 times more active than œstrone when assayed under the described conditions. All three synthetic substances, however, are two to three times more potent than the naturally occurring œstrone.

TABLE III—EFFECTS OF SUBCUTANEOUS INJECTIONS OF ŒSTROGENS ON VAGINAL ŒSTRUS

Substance	Total dose (μg.)	Œstrus (per cent.)	I.U. per g.
Œstrone ..	0·6	26	10 × 10⁶
	0·7	59	
	0·8	89	
Hexadiene ..	0·3	30	20 × 10⁶
	0·4	94	
Stilbœstrol ..	0·3	27	23 × 10⁶
	0·25	47	
	0·3	56	
	0·35	96	
Hexœstrol ..	0·2	33	28 × 10⁶
	0·25	55	

TABLE IV—EFFECTS OF ŒSTROGENS GIVEN BY MOUTH ON VAGINAL ŒSTRUS

Substance	No. of rats	Total dose (μg.)	Œstrus (per cent.)
Hexadiene ..	5	1·0	20
	5	3·0	100
Hexœstrol ..	5	2·0	20
	5	3·0	100
Stilbœstrol ..	5	1·0	20
	5	3·0	100

The three synthetic œstrogens also have been administered by mouth to small groups of unstandardised ovariectomised rats. The substances were dissolved in sesame oil, and 1 c.cm. was given by stomach catheter once daily for three days. The results are shown in table IV. All three substances showed a high degree of activity after oral administration. Œstrone tested under similar conditions was relatively inactive by mouth, for a dose of 50 μg. gave an œstrus response in 1 out of 5 rats and 75 μg. a response in 2 out of 5 animals.

Some preliminary experiments were conducted on the intravaginal application of synthetic œstrogens in ovariectomised rats. These were given in two doses each of 0·01 c.cm. oil by a micro-syringe, one in the evening and one on the following morning. It was found that a total dose of stilbœstrol 0·004 μg. per rat gave an œstrus smear in each of 5 rats. A similar dose of hexadiene produced a positive smear in 5 out of 10 rats, and when hexœstrol was used 6 out of 10 rats showed an œstrus smear.

SUMMARY

The synthetic œstrogenic substance 4 : 4′-dihydroxy-γ : δ-diphenyl-*n*-hexane has been found to sensitise the uterus of the ovariectomised rabbit to the action of progesterone and to stimulate the nipples and mammary glands. Implantation in the rat was prevented by oral administration of the œstrogen. Reduction of body growth and atrophy of the gonads followed its prolonged use in rats.

The uterus of the immature rat was increased in weight by stilbœstrol and by hexœstrol, the changes produced indicating that the activities of the two substances were approximately equal.

When assayed by injection into ovariectomised rats, hexœstrol was found to be more active than stilbœstrol, and both were two to three times more active than œstrone. Stilbœstrol and hexœstrol showed approximately the same degree of activity when given by mouth and when applied intravaginally.

REFERENCES

Campbell, N. R., Dodds, E. C., and Lawson, W. (1938) *Nature, Lond.* **142**, 1121.
Dodds, E. C., Goldberg, L., Lawson, W., and Robinson, R. (1938) *Ibid*, p. 34.
— Lawson, W., and Noble, R. L. (1938) *Lancet*, **1**, 1389.
Noble, R. L. (1938) *Ibid*, **2**, 192.
Parkes, A. S., Dodds, E. C., and Noble, R. L. (1938) *Brit. med. J.* **2**, 557.

Clinical and Laboratory Notes

BILATERAL TUBERCULOUS EFFUSION

IN MILIARY TUBERCULOSIS OF LUNGS

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THE following case appears to be worthy of record in that a search of recent medical publications has not brought to light one of a similar nature.

The patient, aged 26, a carpenter, died from an acute bilateral tuberculous effusion with a very recent miliary spread in the lungs secondary to the pleurisy. He was seen by one of us (G. H.) in his home at the request of his doctor on Jan. 17, 1939. There was no family history of tuberculosis, and the patient's health had been good until September, 1938, when he had an attack of influenza. Since that time he had never really been well and had been definitely worse during December, 1938, and January, 1939, and from the beginning of the latter month he had been confined to bed. When seen his chief complaints were of cough and dyspnœa. He looked hectic and had been running an evening temperature about 101° F. for the last three weeks. Physical examination showed an extensive effusion in the right chest.

On admission to the City Hospital for Infectious Diseases, Newcastle-on-Tyne, on Jan. 18, his general condition was good, apart from his hectic appearance. Temperature 99·4° F., pulse-rate 120, and respiration-rate 34. The right chest was dull throughout, with faint breath sounds and diminished vocal fremitus and resonance, his heart being displaced 1 in. to the left. A radiogram of his chest showed, in the right hemithorax, a massive effusion, which on exploration proved to consist of clear straw-coloured fluid.

Two days after admission he became worse and was delirious for a short time. His temperature began to swing, ranging from 98·4° F. in the mornings to 102° F. in the evenings. On the 26th the breath sounds in the left lung were found to have altered and become jerky. A radiogram of his chest showed that the effusion in the right side was clearing and a new effusion developing at the left base. On the 28th friction sounds were audible over the pericardial area, and on Feb. 1 a coarse pleural rub had developed anteriorly in the left chest. The condition of the right chest improved, the dullness decreasing in its upper half and the breath sounds becoming faintly audible over the same area.

For the next week the temperature continued to swing and became remittent, reaching 104° F. in the evenings, while the general condition slowly deteriorated. The patient, however, insisted that he was doing well and would soon be up and out of bed. On the 10th the right chest, on physical examination and on radiography, showed further clearing, the effusion being limited to the lower third; but the effusion in the left chest continued to increase. The next day a blood-culture was taken which was negative. Pleuropericardial friction sounds were audible at that time and the respiration-rate increased to 44. The last radiogram, taken on the 15th, showed bilateral effusions, that on the left side being the larger. On the 17th both sides of the chest were explored, and clear straw-coloured fluid was obtained from each. The patient died on the 21st.

The fluid obtained from the right chest on Feb. 7 contained lymphocytes but no tubercle bacilli. The fluids obtained from the right and left sides of the chest on Feb. 17 contained lymphocytes and tubercle bacilli. Sputum examinations throughout were negative for tubercle bacilli. Scanty pneumococci were obtained from the sputum by mouse inoculation but did not react to any of the type sera.

On post-mortem examination the following naked-eye appearances were seen. When the sternum was raised the pericardium was seen to be thickened and surrounded by an organised exudate. The right pleural space was obliterated by thickened gelatinous exudate. The left pleural space contained an effusion with some gelatinous strands in it, and the left lung was partially collapsed.

On section no naked-eye evidence of tuberculosis was seen in either lung. The interlobar septum on the right side was thickened and contained one caseous nodule. A smear made from this contained tubercle bacilli. There were some enlarged mediastinal glands, and a few scattered tubercles were seen in the spleen and liver.

Portions of these tissues were sent to the University of Durham pathological laboratory for examination, and the following is the report received from Prof. A. F. Bernard Shaw:—

(*a*) *Right lung.*—This consists of a piece of lung 3·0 by 2·0 cm., the pleura of which is thickened (0·4 cm.) by a white organising exudate. Microscopically this shows an organising tuberculous pleurisy. The underlying lung shows partial collapse, œdema, and some miliary foci of tuberculosis.

(*b*) *Left lung.*—This piece shows a similar appearance to (*a*), but the pleura is not so thickened. Microscopically there is organising tuberculous pleurisy with collapse and œdema of the lung, in which are recent miliary tubercles.

(*c*) *Splenic lymph-node.*—This is enlarged (1·0 cm.) and shows microscopically actively necrotising tubercles of allergic type.

In this material the pleuræ show the oldest lesions, while elsewhere the lesions are secondary and recent.

SUMMARY

A case is recorded in which a patient suffering from pleurisy with effusion on the right side developed a similar condition on the opposite side. Both effusions were clearly shown on radiography. During the illness the original effusion was clearing up. The illness lasted eleven weeks. A terminal generalised miliary tuberculosis was discovered post mortem.

We are indebted to Dr. J. A. Charles, medical officer of health, Newcastle-on-Tyne, for permission to publish this case; and to Professor Bernard Shaw for permission to use his report.

INTUSSUSCEPTION DUE TO SARCOMA

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ATTENTION has been drawn in recent surgical reports to sarcoma of the intestine in children. The case recorded below presents certain curious features differing from the now well-recognised clinical and pathological description.

A sarcomatous mass growing from the gut wall into the lumen of the intestine is an obvious predisposing cause to intussusception; yet Speese (1914), who collected 74 cases of intestinal sarcoma, found it in only 14. Simpson-Smith's (1938) examination of the published reports of this condition in children revealed a 24 per cent. probability of intussusception, though only in about a third of these cases was the intussusception an early feature, it usually following the recognition of a palpable tumour by weeks or months.

The following are some of the well-established facts pertaining to the condition. Intussusception occurs in some 30 per cent. of small-gut tumours (Joyce 1934) but most of these are benign (Raiford 1934), being lipomata, adenomata, and the like. The ileum is the commonest site for a sarcoma (68 per cent.), and only 8 per cent. develop in the jejunum. There is a high incidence of secondary deposits, though a few cases have been recorded in which none was found. Clinically, the commonest features in order of frequency are a palpable abdominal mass, a decline in the general health of the patient, and persistent vomiting. Several patients with recurrent intussusception due to a tumour underwent a number of operations before the true cause was discovered (Oughterson and Cheever 1929).

CASE-RECORD

The patient, a somewhat undernourished boy, aged 9, was admitted after having had colicky abdominal pain for five days. This had come in attacks lasting about ten minutes at a time, and, though nausea had been absent most of the time, there was vomiting on one occasion.

In bed he was rather fretful and looked ill, with a furred tongue, temperature 99° F. and a pulse-rate of 110. The abdomen was slightly tender all over, but especially so over McBurney's point, and the right lower rectus presented some guarding. There was no suspicion of distension, nor was there any palpable mass. Rectally he was a little tender on both sides and there was no blood on the examining finger.

A diagnosis of appendicitis was made, but at operation the appendix was found to be only slightly inflamed. No other abnormality was seen or felt in the abdomen. His condition subsequently deteriorated, the pulse-rate and temperature rising, and some twelve hours later he voided copious greenish-brown vomit. On several occasions after this he vomited

in an effortless fashion, though he never complained of pain or became distended. Despite continuous intravenous infusion because of his dehydration, his condition continued to deteriorate and he died twenty-six hours after operation.

At necropsy two large dark-red polypi were found in his gut. Each was about 1½ in. in diameter and situated in the jejunum some 6 in. and 12 in. from the duodenojejunal flexure respectively. The proximal of these formed the apex of an intussusception which, because of well-formed adhesions, was evidently old-standing. Both tumours appeared to be about the same age, and the intervening gut looked normal. No secondary deposits were found. Microscopic section showed each of the growths to be a small round-cell lymphosarcoma.

DISCUSSION

This case had several unusual features:—

(1) It presented as an acute abdomen, though there were no clinical features to suggest an intussusception.

(2) The intussusception was so situated that its recognition at operation was highly improbable.

(3) It appears to be distinctly uncommon to find two such growths with no secondaries elsewhere, though the possibility must be borne in mind that the distal growth arose by implantation of cells from the proximal.

I wish to thank Mr. J. W. D. Buttery for permission to publish this case and Dr. I. B. Morris for assistance regarding its pathology.

REFERENCES

Joyce, T. M. (1934) *Ann. Surg.* **100**, 949.
Oughterson, A. W., and Cheever, D. (1929) *Surg. Gynec. Obstet.* **48**, 682.
Raiford, T. S., (1934) *Arch. Surg., Chicago*, **25**, 122, 321.
Simpson-Smith, A. (1938) *Brit. J. Surg.* **26**, 429.
Speese, J. (1914) *Ann. Surg.* **59**, 727.

MEDICAL SOCIETIES

BRITISH MEDICAL ASSOCIATION

SCIENTIFIC MEETINGS, JULY 26–28

SECTION OF PUBLIC HEALTH AND HYGIENE

Dr. JAMES MACKINTOSH, chief medical officer to the Department of Health for Scotland, presided over a discussion on

Medicine and the State

Public health, he said, was more and more coming to be regarded as social medicine and Scotsmen had played a pioneer part in the development of this newer outlook. The names of J. D. Russell and Ballantyne, and more recently Parlane Kinloch and Sir John Orr, came readily to mind.

Dr. ANDREW TOPPING (London) proclaimed himself at the outset an advocate of the salaried medical service. A review of the present situation, both in medical education and practice, revealed much that was unsatisfactory. He thought that a salaried service would appeal to the majority of practitioners. The medical curriculum was criticised as devoting much time to non-essentials, such as the watching of difficult and specialist operations, whereas far too little time was devoted to infant-feeding, midwifery and other important parts of general practice. The position of the general practitioner was highly unsatisfactory. He had no hospital appointment, was not free for postgraduate study, and had little time for medical reading; general practice was becoming instead of a high-souled profession a rather unethical trade. The wrong type of doctor was often more successful than his painstaking and conscientious neighbour. Consultants and specialists too were in a false position: financial assets were often more important than medical capabilities; success was problematical and not measured by ability. Public-health and social services suffered likewise from many disadvantages. Many local authorities were unable to provide the services they should, so that the scope of those working with them was limited The time had come to consider how best improvement could be obtained. The medical profession was a thinking, serious part of the human race, anxious for the welfare of the people. It was most desirable, if not indeed essential, that doctors should have a feeling of security and be able to devote themselves unstintingly to their work. There would obviously be difficulties in achieving an ideal service but it was absurd to regard them as insuperable. The history of the many services already introduced showed what could be done. He would like to see a careful selection of students in the first place, a modernised curriculum and a reduction of the expenses of medical education. Every graduate should have a period in hospital and all should have salaries commensurate with age and knowledge. The hospital should be the centre of the medical region, the organisation radiating out from it. He did not believe that work would become slack under a salaried system, but rather the reverse. Control of the service must be entirely non-political and should in his view be in the hands of medical men.

Dr. W. G. BOOTH (Boston, Lincs.) said that a new outlook on medicine had sprung from the great increase of scientific knowledge in the last century and from the education of the masses. He believed that the growing awareness on the part of the working people of the growth of medical knowledge made them dissatisfied with the limitations of national health insurance. An effort had been made to provide for the deficiencies by public-health measures, such as mother and child welfare acts. Development had been on the public-health side rather than in the practitioner service. The difficulties associated with this development tended to stimulate the possessive and acquisitive instincts of the practitioners. Under a controlled medical service the attitude would be different, as the patient would be in relation to the state. He reminded the meeting of Bernard Shaw's dictum that there is no greater danger to the public than a poor doctor. Some form of state medical service was inevitable. He considered that encroachment on the work of practitioners would have been even greater had not the medical officers of health restrained local authorities, and it was not likely to become less. The general practitioner if he were wise would press for a state service as quickly as possible before encroachment wiped him out altogether. While the British Medical Association was strong it should push forward with suggestions.

Dr. H. J. RAE (Aberdeen) spoke of the public-health services in the north-east of Scotland from the end of the late war to the present time. He pointed out how the various amalgamations in the form of regional services had overcome the shortcomings inevitable in having too small areas of administration. The ideal unit in relation to the provisions of the Local Government Act was one with a population of a quarter to half a million. The Aberdeen region with its population of some 340,000 fell within these

limits. In the county there were divisional officers at the periphery, in the city there were medical specialists in bacteriology, fevers, tuberculosis, and venereal diseases. The services of these officers were whole-time and available throughout the areas. In much of the work general practitioners were closely associated, more in the country than in the city. In the counties a liaison committee consisting of representatives of the county division of the B.M.A. and public-health officers met periodically to discuss matters of interest.

Dr. E. R. C. WALKER (Aberdeen) said that efforts must be made to agree on basic principles. The Scottish committee of the B.M.A. some five years ago had arrived at the basic propositions that medicine is essentially the application of human biology and that the health of an individual at any time is the measure of his success in reacting to his environment. If the development of the state was considered also from the standpoint of evolutionary biology, it could be regarded as an instrument devised by man favourably to alter his environment. Since medicine was by definition the art and science of restoring and maintaining health, it followed that the function of medicine was inevitably a concern of the state. From these propositions it followed also that the basic provision must be a corps of men and women skilled as health advisers. The wisdom of preserving freedom of choice as far as possible seemed to follow on this conception. Looked at in this way medicine was essentially a service and not a business and as such would seem more fittingly remunerated by salary than by fee. The emoluments and conditions of the service should be such as to attract young men and women of high qualifications. Rise in the scale of salary should take place early; this would encourage early marriage and the raising of healthy families so that the doctor's precepts could be reinforced by example. The service should be a national one and on balance a regional organisation with corresponding ad-hoc administration seemed indicated.

Dr. WALTER ASTEN (Bournemouth) said that the idea of a state medical service had the unfortunate effect of retarding the improvements for which all were looking. The word "state" was a bogy, especially in the profession. What was wanted could never be obtained under the existing system. In spite of the provision of the Local Government Act only about half the public-health committees had succeeded in implementing the intention of the act to absorb and improve the poor-law medical services.

Dr. SAGGAR (Dundee) said that public-health machinery was needed to dispose of the causes of disease. The doctor was not only a medical but also a social and political unit. He did not believe that free choice of doctor was very important and pointed out that the absence of free choice in education was not seriously resented. A state medical service would be much less costly than the present arrangements and the work of the doctor under it would be better and less arduous.

Dr. LAURENCE KILROE (Rochdale) said that the general practitioner was painfully aware of his shortcomings; they were made clear to him from all sides. He was impressed with the possibilities of a salaried service and thought that on the whole competition did more harm than good. He agreed with Dr. Walker that in the present state of world affairs there was plenty of time to work out a good scheme. He emphasised the necessity for coöperation between the B.M.A. and other bodies in such work.

Dr. WICKREMESINGHE (Ceylon) commented on the unanimity of opinion so far at the meeting. In Ceylon they had a salaried service and he thought there were many disadvantages in a state service. A servant of the state had to go where he was sent and when he was sent. He favoured reducing the difficulties of private practice by throwing open medical centres for use by practitioners, thereby improving their service to the community.

Dr. TOPPING in his reply urged that more consideration should be given to the subject generally. Financial and other detailed arrangements should be worked at. He believed that a state service would be self-supporting in a few years by reason of the effect it would have in eliminating overlapping and in the improvement of health. He criticised the B.M.A. as seeming often to put the interests of the members before those of the community.

Dr. MACKINTOSH, summing up, said that constructive criticism was needed. He pointed out that the distinction between a salaried and a state service was not a fine one but a broad and deep one. There was a great difference between a state service as exemplified by a civil service and a salaried service such as the education service. In the latter there was freedom of the individual members to form associations for the promotion and protection of their interests and freedom from direct governmental control.

SECTION OF SURGERY

With Prof. J. R. LEARMONTH (Aberdeen) in the chair, this section discussed

Venous Varicosities

Prof. LAMBERT ROGERS (Cardiff) said there were three factors in the production of varicose veins. First there was a congenital element, for example, in varices of pial veins over the cortex. Secondly there was a congestive factor as in pregnancy. Lastly posture was a very definite cause. Varicocele was a transient condition of adolescence and did not require any operative treatment. Before any treatment was begun the patency of the deep veins must be ascertained. Ligation combined with injection was the method of choice in most cases. Pregnancy was an indication for conservative treatment. Recurrences after injection alone were high. It was important to perform any ligation high up on the saphenous vein above the entry of any tributaries. Small varices, especially in pregnancy, might be treated by injection alone, and large venous pouchings were better excised. As a sclerosing agent he used that described by Biegelseisen in 1937, monoethanolamine oleate (Ethamolin) in benzyl alcohol. There was less danger of perivenous irritation than with other substances. He concluded with a plea for more surgery in the treatment of varicose veins.

Mr. W. B. GABRIEL (London) said that, in the treatment of hæmorrhoids, it was important to decide whether they were external or internal, whether there were any other ano-rectal conditions present and the degree of prolapse. External hæmorrhoids were covered by skin. Examination of the anal canal might reveal a prolapsed hæmorrhoid or surface ulceration above the obvious lesion. Acute anal hæmatoma was treated by excision of the hæmatoma along with a pear-shaped piece of skin and any skin tag present. An internal pile was covered by rectal mucosa which might become epithelialised. There was always a groove between the anal skin and the

pile mass. There were three stages of internal piles according to the degree of prolapse, and it was important to ask the patient to strain down as the speculum was being withdrawn to see the degree of prolapse. Other ano-rectal conditions must be excluded by complete proctoscopy and sigmoidoscopy. Treatment was expectant, by injection or operative. Over-indulgence in aperients was a common cause of hæmorrhoids. In inflammatory conditions expectant treatment, rest and eusol compresses gave good results. Portal pyæmia was a very rare complication. Injection was ideal in first-degree piles which did not extrude even on defæcation, but was of less value in more advanced forms. It was important to make the injection with 5 per cent. phenol in almond oil at the upper pole of the pile. The patient ought not to feel pain during the injection. Operative excision was recommended in the third degree of prolapse. Low spinal or local anæsthesia was better than inhalation anæsthesia, as the relaxation of the sphincter was more complete. The operation he preferred was that described by Milligan and Morgan. The pile was pulled down and the muco-cutaneous junction cut with scissors. The subcutaneous sphincter was exposed, and also the longitudinal muscle. The pile mass was ligated using No. 3 chromic catgut after transfixion. The pile was then excised. No attempt was made to approximate the skin closely. Recurrences were mostly due to incomplete excision or faulty technique.

Mr. E. T. C. MILLIGAN (London) gave statistics of a large series of cases treated at St. Mark's Hospital. Injection was of most value in first-degree hæmorrhoids. It was less use in the other degrees, but patients preferred it as it did not interfere with their normal life. He discussed local factors in the production of hæmorrhoids. The longitudinal muscle of the bowel was the main factor in maintaining the pile in its normal position. When it became stretched an irreversible change had taken place. Secondary fixing structures were the elasticity of the anal mucosa and submucosa and the blood-vessels themselves. Sclerosing injections replaced the secondary structures only. At operation all the abnormal structures were removed, so that recurrence was almost impossible. Successful treatment gave amazing comfort and relief to the patient.

Mr. PHILIP TURNER (London) described the operation of excision of varicose veins as tedious, futile, and bloody. The weak spot was the saphenous opening where stasis was encouraged by the three superficial tributaries entering in a downward direction and by the occasional pressure of an enlarged lymph-gland. At operation it was advisable to ligate all the tributaries and to remove the lymph-gland.

Mr. J. B. OLDHAM (Liverpool) suggested that it was useful, when combining injection with ligation, to pass a ureteric catheter down the vein and inject through it while it was being withdrawn. The operation for varicocele was useless and ought not to be made obligatory before entering the Services.

Mr. N. E. WATERFIELD (London) advised stretching of the anal sphincter at operation to relieve post-operative pain.

Mr. H. J. MCCURRICH (London) spoke of the empty-vein technique of injection. With it good results were obtained without the formation of a hard tender cord immediately after injection.

Mr. G. GORDON-TAYLOR (London) had found Trendelenburg's operation a very good one provided the saphenous vein was tied flush with the femoral vein. He also agreed that operation for varicocele was unnecessary.

Mr. J. H. F. JAYASURIYA (Ceylon) said that varicocele due to filariasis was common in Ceylon. Veins were grossly dilated and lymphatics blocked. Secondary streptococcal infection was common but yielded to sulphanilamide. Operation was the best treatment for this condition.

Prof. LAMBERT ROGERS, in reply to a question, said that he used monoethanolamine oleate in doses of about 5 c.cm. He had not used the empty-vein technique, but thought that it seemed to be a good one.

Mr. W. B. GABRIEL thought that stretching of the anal sphincter depended on the anæsthetic used. If it were tight after proper spinal or local anæsthesia it must have some fibrous contraction and must be stretched or divided in the middle line posteriorly. His operation was not followed by stricture. It was important to examine the anal canal digitally on the seventh day, and again after a few weeks.

Radiotherapy and Surgery for Cancer

With Mr. G. GORDON-TAYLOR (London) in the chair, Mr. RALSTON PATERSON (Manchester) said that malignant growths could be divided into three groups. The first were curable or at least treatable. The second responded to palliative radiotherapy and the third group were so far incurable. Into the first group came malignant disease of uterus and vagina, skin, breast, and mouth and tongue. These were easily diagnosed and could be successfully treated if attacked in the early stages. Incurable malignant disease occurred in liver, pancreas and lung. Here even palliative radiotherapy was useless. Radiotherapy was contra-indicated in cancers of the gastro-intestinal tract and connective tissue and osteogenetic sarcomata and more advanced malignant disease. It was often difficult to persuade doctors that in these radiotherapy was unsuitable even as a palliative measure. Radiotherapy had a limited value in carcinoma of the pharynx, bladder and prostate, œsophagus, lung and brain, but it occasionally relieved symptoms for months or even years. It was the treatment of choice in embryonal tumours, some tumours of the thyroid and salivary glands, and tumours of reticulo-endothelial origin. There were cases where radiotherapy could be helped by surgery, such as growths of the mouth, skin, bladder, cervix and antra. Cases where surgery was the dominant treatment, and radiotherapy of value, were growths of the breast, lymph-glands and body of uterus, and giant-cell tumours of bone. Sometimes borderline cases could be made operable by deep X rays, for example, mixed tumours of the parotid gland. Early diagnosis and treatment of the curable cancers of the breast, mouth, uterus and skin were essential. The public should be educated to recognise the early symptoms.

Plastic Surgery and Facial Injuries

Mr. A. H. MCINDOE (London) said that what the motor-car did today war might do tomorrow. Early treatment of facial injuries was most important, and frequently prevented grave permanent disfigurement. Injuries could be divided into those with no gross loss of substance and those with considerable tissue loss requiring some sort of graft later. Treatment in the second type was palliative. Abrasions with ingrained grit or powder should be treated by immediate removal of all the foreign material with

a sharp curette. Débridement was less important in the face than elsewhere thanks to the very profuse blood-supply. Heavy suture material should be avoided as the suture marks were very difficult to remove. Eyeless needles should be used. Fractures of the zygoma and nasal bones were extremely disfiguring and demanded immediate treatment. He described an emergency splint for the upper jaw made from a dental impression tray and interdental wiring for fractures of the mandible. The treatment of gross compound injuries was palliative and no attempt to graft tissues should be made until the danger of sepsis had completely vanished.

Surgical Treatment of Hypertension

Prof. J. R. LEARMONTH introduced Dr. W. McK. CRAIG (Mayo Clinic) who said that there were three factors in the maintenance of the blood-pressure—viscosity of the blood, propulsion, and peripheral resistance. Of these only the third could be altered surgically. Recently hypertension had been artificially produced in animals by compression of the renal vessels. In 85 per cent. of patients hypertension was primary; in the rest it was secondary to some other condition such as coarctation of aorta, chronic nephritis or suprarenal tumour. In primary or essential hypertension heredity was an important factor. Cold water and Pentothal sodium tests could be used to determine the upper and lower limits of the blood-pressure. Potassium thiocyanate treatment was useful especially after sympathectomy, but it was a very toxic drug, and must be used with extreme care. In 237 cases treated surgically there had been no operative mortality. Many cases which were now treated by operation might be treated medically within the next decade.

Mr. L. R. BROSTER (London) thought that there was not enough coöperation between physicians and surgeons in dealing with cases of hypertension.

Mr. J. B. OLDHAM (Liverpool), in his experience of adrenalectomies, had found that the blood-pressure rose again after a time. Denervating the kidney did not make any difference to the blood-pressure.

Mr. NORMAN LAKE (London) had done sympathectomies for other reasons and found that the blood-pressure had risen after some years.

Dr. CRAIG described the operation of subdiaphragmatic sympathectomy in detail, and illustrated it with a short film in colour.

MORAL REARMAMENT

A RECEPTION was held in Aberdeen on July 22 by Sir John and Lady Orr and Dame Louise McIlroy at which Sir John Orr presented the following resolution:—

We, members of the British Medical Association, believing that many diseases and much physical and mental suffering are caused by morbid fears, worries and hatred, by bad housing, bad diet and anxiety due to poverty, and believing that moral rearmament will create a new spirit of justice, love and respect for the dignity of the common man which would lead to the abolition of these diseases, resolve to equip ourselves morally and spiritually and to give full support to all efforts to apply the resources of science to the building up of a new world in which men will be able to attain their fullest inherited capacity for physical, moral and spiritual development.

Evidence was given of moral rearmament applied to medical practice and a film was shown which illustrated the effect on youth of a new physical and moral fitness.

Dr. E. E. CLAXTON, of Folkestone, laid stress on the part the profession could play in the international sphere. Medicine, he said, knows no national barriers, and our training in accurate diagnosis and treatment could be applied to the world's unrest as much as to disease. The doctor, with his natural access to the homes of the nations, could in fact tackle these problems at their source.—Dr. DONALD COURT, registrar to the children's department of Westminster Hospital, showed how moral rearmament had produced a new kind of contact with the staff, the patient and the general practitioner, and enabled him to deal effectively with the nervous child.—Dr. ALEXANDER MUIRHEAD, regional medical officer of health, gave instances of the new coöperation between both colleagues and rivals in Eastern Scotland which had resulted from moral rearmament, and Dr. MARY MACNICOL, of Edinburgh, spoke especially of its application to general practice.—One of the guests, Mr. ROLAND WILSON, of Oriel College, Oxford, showed how moral rearmament was rapidly becoming a world force and exerting a constructive influence on national policy both in Europe and the Far East.

A message has been addressed to American citizens at the World Assembly for Moral Rearmament at the Golden Gate Fair, San Francisco.

In the continuing uncertainty of world affairs, it says, medical practitioners in common with others are deeply concerned to restore the security essential to normal living. It is vital to create confidence during an emergency, but even more urgent to prevent catastrophe and to lay the foundation of a just and lasting peace. Science has made great advances, but without corresponding moral progress we risk losing even the benefits already achieved. Behind much disease as behind world unrest are fear, self-indulgence, jealousy and resentment. These are problems for which Medicine might provide a radical solution. It is still our privilege to enjoy unrivalled contact with the homes and people of the nation. Our immediate task is to teach men that health is not the mere absence of disease but includes a moral and spiritual foundation for life and the replacing of conflict and apathy with a purpose that claims the whole personality in the service of our fellows.

A growing body of people in many countries is calling for this "moral rearmament" to provide the discipline and the direction needed by both individual and nation. Our profession can give a lead to such a programme which is in accord with the highest ideals of our tradition. To achieve it we realise that the highest standards of honesty and unselfishness must be the touchstone of our professional and private lives. Only through insistence on these spiritual values will the resources of science be liberated and a new world built in which men can attain to their inherited capacity for physical, moral and spiritual development.

This manifesto is signed by: Dr. G. C. Anderson, Sir Thomas Barlow, F.R.S., Lady Barrett, Sir Henry Brackenbury, Dr. H. Guy Dain, Mr. W. McAdam Eccles, Dr. Thomas Fraser, Prof. John Hay, Lord Horder, Prof. Geoffrey Jefferson, Prof. R. W. Johnstone, Prof. John Kirk, Dr. Colin Lindsay, Sir Ewen Maclean, Dame Louise McIlroy, Sir John Orr, F.R.S., Prof. Leonard G. Parsons, Dr. Donald Paterson, Prof. Lambert Rogers, Sir Humphry Rolleston, Mr. Cecil P. G. Wakeley, Sir Beckwith Whitehouse, and Prof. Samson Wright.

REVIEWS AND NOTICES OF BOOKS

Royal Northern Operative Surgery

By the Surgical Staff of the Royal Northern Hospital. London: H. K. Lewis and Co. 1939. Pp. 551. 42*s*.

LIKE all multiple-author books the standard of writing and of the selection of matter for inclusion varies very much, but it can be said with confidence that the average is high. The book is an attempt to describe one reliable operative procedure for each common surgical condition. Rarely performed methods and those under trial are not in the main described. This is one point we would select for special commendation. The newly fledged surgeon is saved from the dilemma of choosing a suitable operation from a number of what may appear to him equally desirable and effective procedures.

There are two sections which are particularly helpful and practical, those on affections of the rectum and on thoracic surgery. Here the authors give easily followed directions for carrying out the operations they describe, but this cannot be said of all the contributions. One suspects that mucoclasis of the gall-bladder described by Thorek is seldom performed at the Royal Northern Hospital. The follow-up of gastric cases does not appear to have been done very carefully, since a simple separation of the jejunum from the stomach for gastrojejunal ulcer finds a place in the treatment of this serious complication of gastrojejunostomy for duodenal ulcer. The operation of partial gastro-duodenectomy, which for years has now been established as a more reliable operation than gastrojejunostomy, is not even mentioned. In the chapter on kidney operations there is an excellent description of subscapular nephrectomy—in Swift Joly's own words. It is questionable whether resection of the pelvis in hydronephrosis operations is generally desirable. A surgeon seeking for information about auricular fibrillation after a thyroidectomy will meet with a disappointment for he is told, in all simplicity, that "a physician should be summoned." There is a curious omission of the name of R. E. Norrish in the list of contributors on one of the front pages, yet in the preface he is thanked for invaluable assistance and for his own contributions.

Apart from a few such criticisms there can be nothing but praise for this new book. Particularly will it be helpful to surgeons early on in their career. The methods described are practical, sound and reliable. Operative instructions are clear and the illustrations very good.

Angina Pectoris

Nerve Pathways, Physiology, Symptomatology, and Treatment. By HEYMANN R. MILLER, M.D., attending physician, Sydenham Hospital; associate attending physician, Montefiore Hospital, New York City. London: Baillière, Tindall and Cox. 1939. Pp. 275. 15*s*.

Dr. Miller has approached angina pectoris from an anatomical rather than from a physiological point of view, for his chief interest lies in the nervous pathways by which cardiac pain is transmitted. The justification for this interest lies in the success of attempts made to relieve angina pectoris by surgical interruption of the afferent nerves from the heart. The book contains 31 valuable charts illustrating the complicated anatomy of cardiac innervation, and also a useful discussion of the various surgical manœuvres which have been employed in the treatment of angina pectoris. But the stressing of the importance of the nervous pathways has resulted in the comparative neglect of the factors fundamentally responsible for the pain. The consideration of the actual cause of cardiac pain occupies but two and a half pages of the book, and acute myocardial infarction is hardly distinguished from an attack of angina pectoris. This anatomical bias, however, is a corrective for those who regard angina pectoris as a question of muscle ischæmia and hypothetical "P" factors. The book ends with an attempt to study individual experiences of pain and reactions to it, a problem which must occupy anyone who has seen unbearably painful cardiac infarction in one case and the same thing apparently painless in another.

Civilization, War, and Death

Selections from three works by Sigmund Freud. Edited by JOHN RICKMAN, M.D. Camb. London: Hogarth Press, and Institute of Psycho-Analysis. 1939. Pp. 102. 3*s*. 6*d*.

THE publication of these selections at the present time is peculiarly appropriate. The book shows Freud as an essayist rather than as a psychologist, and, as the original works were intended for the layman, the extracts can be read by those who have no special knowledge of medical psychology. There is much in them which reveals the profound thinker and humanitarian, with a mind aloof from nationalism. Freud presents the motives of mankind as he sees them without emotion. Dr. Rickman's choice of selections shows that he has a deep knowledge of the work and a sincere regard for the writer, and he is to be congratulated on the skill with which the choice is made. The original German has been translated into readable, literary English.

Physiology of Exercise

(3rd ed.) By JAMES HUFF MCCURDY, A.M., M.D., M.P.E., director of physical education course in Springfield College, Massachusetts, 1895–1935; and LEONARD A. LARSON, B.A., B.P.E., M.Ed., Ph.D., professor of health and physical education at the college. London: Henry Kimpton. 1939. Pp. 349. 17*s*.

IT must be a source of mystification to our American colleagues that there is nothing analogous to their organisation for the scientific study of athletics in this sport-loving country. In the United States the universities and other centres of education maintain their professorial chairs and their directorships of physical education with faculties, degrees and diplomas. Here, on the other hand, any investigations are left to a few voluntary enthusiasts. And yet we are entitled to claim contributions to the subject of the physiology of exercise which are far from insignificant. The late Professor Bainbridge, for example, may justly be regarded as having established fundamentals which will stand for all time.

With subsidised research, a large body of workers, and unlimited material, it is not surprising that an immense literary output is forthcoming from the United States, and an outstanding feature of this book is the number of references to American work. Its full bibliography is perhaps its chief recommendation, for, after the interesting introductory chapters, much of the material set out will be of little value except to the research worker. The jerky staccato style

makes study difficult. Nor is a sense of proportion maintained. Thus eleven tests for cardiovascular function are fully described, not one of which has any advantage over the simple observation of the effect of change of posture on the cardiac rate and blood-pressure (mentioned in Sir Adolphe Abrahams's paper on p. 309 of this issue), and twenty pages are devoted to figures dealing with "organic efficiency tests," whereas "stitch," which is of the greatest interest to many athletes, is dismissed in nine words, in an explanation which is almost certainly incorrect. An oxygen debt of roughly 3¼ litres per minute is said to have been incurred during a four-mile boat race. This would mean a total oxygen debt of over 70 litres, whereas A. V. Hill has shown that the maximum debt ever estimated in a very exceptional subject was about 20 litres. Such statements show a lack of critical scrutiny which is both surprising and disappointing in such authorities.

Protein Metabolism in the Plant

By ALBERT CHARLES CHIBNALL, Sc.D. Camb., F.R.S., professor of biochemistry, Imperial College of Science and Technology, London. London: Humphrey Milford, Oxford University Press. 1939. Pp. 306. 18*s*.

THIS book, which is the twenty-seventh volume in the series published by the Silliman foundation, maintains the high standard set by previous writers. Professor Chibnall has divided his subject in a natural manner into the protein metabolism of the seedling, and that of the leaf. After a historical review of the earlier researches, he emphasises the effect on the course of protein synthesis according to the form of nitrogen provided. In dealing with the leaf, he describes the reactions involved in his ether-water method of isolation. This method has revolutionised the chemistry of leaf proteins, and is an example of the truth that advances in science depend upon the evolution of new methods. In dealing with leaf-protein metabolism the author has allowed himself a certain latitude and may not find other workers in this field agreeing with him. He includes also a discussion on the reason for the difficulties encountered in isolating proteins from the leaves of pasture plants. His description of the course of protein metabolism in the leaf, including as it does data obtained from detached leaves as well as those kept in the dark, is highly stimulating. The labile character of the proteins of leaves is well known, and the chapter on the regulation of the metabolism in the leaf provides much food for thought.

The value of the book is enhanced because the author, while using his skill as a chemist, has considered his material as living material. The book should therefore appeal to all biologists and especially to the physiologist.

Endocrinology in Modern Practice

(2nd ed.) By WILLIAM WOLF, M.D., M.S., Ph.D., endocrinologist to the French Hospital; attending endocrinologist to the Misericordia Hospital, New York City. London: W. B. Saunders Company. 1939. Pp. 1077. 45*s*.

IN this book the author has successfully compressed the vast and diverse information available on the endocrine glands, and has produced what is perhaps the best general textbook on the subject in the English language. Thanks to rapid experimental advance, large sections of a book on endocrinology may be out of date in as short a time as a year. So in this second edition extensive revision has been necessary. Among the new subjects are sections on zinc-protamine insulin, the hypoglycæmic states, and endometrial suction biopsies. Perhaps owing to the peculiarity of examinations the student is well acquainted with the rarer disease syndromes of the anterior pituitary or the adrenals, but knowledge of obesity, the menopause, sterility and menstrual disorders is often very slender. Dr. Wolf gives these important practical problems the space they deserve.

The book has one serious omission; in all its 1077 pages there is not a single reference to the literature. Inevitably this leads to dogmatism on controversial matters, so that in places it is difficult not to disagree fundamentally with the author. It is not suggested that a complete bibliography should be presented in a volume of this sort, but a critical selection of the more important papers would have been of great value, and might well have replaced the rather useless summaries at the end of each chapter or the 33 pages devoted to symptom diagnosis.

As the title implies, this book is written mainly for the practitioner, but it will appeal also to the student wanting a general introduction to endocrinology. For either audience, however, it seems a mistake not to put all sides of the question at a time when the therapeutic application of endocrine preparations is fraught as much with danger as with advantage.

NEW INVENTIONS

A CLOT-EVACUATING CATHETER

FOR severe cases of clot-retention the Bigelow evacuator is of unquestionable utility. The technique of this generally requires the operating-theatre and a general or spinal anæsthetic.

I have used the instrument here illustrated long enough to have proved its value. It was made to my design many years ago by the Genito Urinary Manufacturing Company. Essentially it is a catheter which can easily be passed after Novocain has been injected into the urethra and is made in two sizes, 24 Ch. and 27 Ch. It has two very large laterally placed windows (22×6 mm.). A flexible lobster-tail

obturator, which fits snugly but not tightly, closes the windows and allows introduction without trauma. The most important function of the obturator is to act as a suction piston, for on sharp withdrawal solid clots can be evacuated in rather a remarkable and unexpected way. Perseverance in this, with occasional introduction of an ounce or two, gradually increasing as the bladder becomes freed of clots, of a 1 in 10,000 solution of nitrate of silver with a Thomson-Walker syringe, will eventually clear the bladder completely. A preliminary injection of morphine will increase tolerance, and no further anæsthesia other than novocain locally is required. The whole performance can easily be carried out in the patient's bed.

Many a time I have cleared a bladder distended to the umbilicus with apparently almost solid clot, with far less constitutional disturbance than that associated with the requirements of the Bigelow's evacuator; it is also much simpler.

JOHN EVERIDGE, F.R.C.S.

THE LANCET

LONDON: SATURDAY, AUGUST 5, 1939

THE MESS OF MEDICAL LITERATURE

IN a recent book H. G. WELLS tells of an amazing man who attempted to tidy up the mess of fundamental thought throughout the ages. His hero, William Burroughs Steele, gave his life to the exposure of "habitual piecemeal thinking" and being frustrated took an overdose of sedative, leaving as his dying message the words "We make a pattern better than we know. Keep on with it." It is a story that may well haunt the student of medicine who is perpetually frustrated, in his urge to fit his own work into a general scheme of knowledge, by the mess of medical literature. A lively correspondence in our own columns was opened by Professor MCDOWALL with the statement that the present state of medical literature is chaotic to a degree that leads young and enthusiastic investigators to waste their energies on doing work which would be unnecessary but for lack of coördination in presenting the work of others. He was the more entitled to say this, having himself made a brave attempt to provide [1] a sign-post to one section of medical knowledge—the physiology of the circulation. The various librarians who have taken up his challenge agree in the urgency of the difficulties if not in the method of their solution, and it may be the time has come to consider possible solutions of a problem which faces writers and librarians and readers alike. The problem itself was stated in a leading article not long ago.[2]

A beginning might be made in three directions: (1) some measure of control over the volume of medical periodical literature, (2) an effort to ensure complete indexing of the contents of medical periodicals and books, (3) coöperation between abstracting journals to secure completeness without overlapping. Whenever an author is following up work already published Sir WILLIAM BRAGG has suggested it would generally be enough to print a summary instead of a full-dress article, provided that a type-written or photostatic copy (or even a microphotographic film) is available for other workers in the same field who alone require the details. Reduction in the number of circulating periodicals would require an international convention with the power to eliminate and to act as a court of reference on the need for a new periodical. Utopian though it may appear this would be the rational method of reducing the volume of scientific literature, and the time is approaching when an attempt along these lines must be made. Without waiting for this time someone should get on with an indexing journal of medical science and practice which would list all periodical literature and notice all new books published. At the present time we are indebted to the United States for the two great indexes: the Quarterly Cumulative Index Medicus and the Index Catalogue of the Surgeon General's library. But the Index Medicus does not include all existing medical periodicals nor the titles of all the articles in the indexed periodicals. The Index Catalogue is even less complete, invaluable as it is for early records. If the Index Medicus is to continue as our main reference to scientific literature, there should be international coöperation to ensure its completeness, with a subsidy from every country proportional to the number of titles listed from its journals.

The third part of the problem is more difficult. The cost of abstract-journals is high; a complete set would cost a library at least £300 a year. Actually there is much overlapping and the complete medical field is not covered. Eleven of the abstract-journals dealing with clinical medicine are due to the enterprise of one German publisher and their total cost is slightly more than half of the cost of all the abstract-journals published in the world. Here is an equally clear case for international coöperation; without it the investigator cannot hope to find the abstracts within a reasonable time of publication. But even if the investigator had a complete indexing tool and a complete range of abstract-journals at his disposal, he would still need a specialised directory, on the lines of the general "Subject Index to Periodicals," to tell him where each of the periodicals he wishes to consult is to be found. Each country should possess a complete collection of all medical periodical literature or, if not a complete set, an arrangement whereby some photographic reproduction of the article in the missing journal can be secured; and no country in the world at the present day has such a set. In Great Britain no existing library could afford to take on the task. The universities and research section of the Library Association is however attempting to compile a directory of what is available here and there in the United Kingdom. This is an extension of what was begun by Professor LEIPER fifteen years ago, but unless the necessary funds are forthcoming soon the project must fail. In London, as has been noted in the correspondence, four medical libraries have agreed to a common policy in order to reduce duplication and to pool their resources for the benefit of investigators in the four institutes. We may hope before long to have a list of the periodicals available in these four libraries; other London libraries will then no doubt enter the common pool. The critical factor is the poverty of medical libraries. For half a century the burden on their staffs and budgets has been piling up. Small staffs and small budgets lead to inefficiency and waste. The medical library is as essential a tool in the advancement of medical knowledge as is the research laboratory. In a sense it is the master-key. To clear up the mess of medical literature two things are needed—the pioneering spirit and a reckless benefactor.

1. *Lancet*, 1939, **1**, 825.
2. *Ibid*, p. 765.

YOUNG ADULT PHTHISIS

DURING the present century young adults have not shared in the general decline of the death-rate from respiratory tuberculosis. This disquieting exception, noticeable especially among young women, has attracted much attention, but without as yet any satisfactory determination of the factors responsible—though the features of modern life incriminated have been numerous. In the last few years the reports of the Registrar-General for England and Wales have shown a distinct turn for the better. For young adult males the renewed decline in their phthisis mortality has been such that in a few years the death-rate may be as low as if no set-back had taken place in the war and post-war years. Young adult females also show a material fall in mortality since 1931, but their death-rate is still considerably higher than it would have been if the trend of the latter half of the nineteenth century had been continued. Compared with the males the set-back in their rate of mortality was much more severe and, it is important to realise, certainly took place before the war. Between the decades 1871–80 and 1891–1900 the recorded death-rate from phthisis for females at ages 15–24 years was halved; between 1901 and 1931 it showed scarcely any improvement at all; in the war and post-war years there was a considerable rise. Even if the present more favourable trend should be continued, it is clearly of interest and importance to elucidate the causes of the previous set-back, for which the exceptional conditions of the war years cannot be held wholly responsible. Obviously no simple solution is likely; many factors may well have played a part and the difficulty lies in determining their relative importance. This is the particular merit of the statistical study made by Dr. D'ARCY HART and Professor PAYLING WRIGHT,[1] now published with a commendatory note by Sir ARTHUR MACNALTY. Their work has developed along two lines. Taking England and Wales as a whole they have first set the mortality experience of the two sexes at various ages against the measurable changes in social conditions which have occured in the last 90 years. Secondly they have made a more intensive examination of the differences in mortality, particularly in that of young women, experienced between one urban aggregate and another during the past quarter of a century.

Under the first heading they have examined the trend of phthisis mortality at different ages, between the years 1850 and 1936, in relation to the course of real earnings. They show that the mortality curve for young women matched the latter curve most closely, while that for young men came next. From this they conclude that young adults and especially young women may be particularly sensitive to changes in the standard of living and suggest that this may be the effect of combined environmental and biological causes —"the stress and strain of industrial occupation during the important formative period of adolescence and early adult life." Lack of comparative data prevents them bringing the standard of housing into the picture before 1891, but they note that the check to the rise in the standard of living that occurred in about the year 1900 was accompanied by a set-back in the improvement in general housing conditions. At much the same date there was an accentuated increase in the industrial employment of young women. A better examination of the possible importance of these factors lies in their second line of inquiry—into local differences in mortality and environment. For this purpose Hart and Wright have investigated the experiences of the county and metropolitan boroughs. It has been pointed out by previous workers that such local differences may in part be due to the selective migration of young adults; for example in the north of England the death-rates of the towns might be artificially raised by a reduction in recent years of a physically fit immigrating population and an additional loss of the more healthy members of the population by their emigration in search of work. Such effects would obviously weaken the comparison between recorded death-rates and environmental conditions.

From various statistical tests the authors, however, are satisfied that migration could not fully account for local differences in mortality, and that between 1921 and 1931 it can have played relatively little part in producing the very considerable differences in mortality shown by the English county boroughs. Such differences are found to be related, as might be expected, to general measures of poverty, and subdivision of those measures puts most weight on the prevalence of inferior housing, implying differences in closeness of personal contact. The special effects of housing on young adult females are suggested by the following percentage changes in phthisis mortality between 1911 and 1931: females, all ages, best housed towns, decrease of 34 per cent., worst housed towns, decrease of 26–30 per cent.; females aged 15–24, best housed towns, decrease of 22 per cent., worst housed towns, increase of 10–14 per cent. The influence of housing conditions on the improvement in phthisis mortality of young adults is further shown in the finding that in two groups of badly housed towns one had shown over 40 years a distinctly greater rate of improvement in its housing and a concurrently greater decline in its phthisis mortality at ages 15–24 than had the other. The authors, therefore, conclude that differences in housing conditions from one locality to another are a very important factor in producing the differences both in the present levels and in the recent changes in phthisis mortality among young adults in the English county boroughs. In London this association with housing is very slight but it is probable that the housing index of a metropolitan borough is not an adequate measure of closeness of contact for an age-group, many of the members of which spend a large part of the working day elsewhere. Published data derived from the special surveys

1. Tuberculosis and Social Conditions in England: with special reference to young adults. A statistical study by P. D'Arcy Hart, M.D., F.R.C.P., and G. Payling Wright, D.M., M.R.C.P. London: National Association for the Prevention of Tuberculosis. Pp. 165. 3s.

of poverty and social conditions in London made it possible, on the other hand, to relate the phthisis death-rates of its areas to such other components of the standard of living. The information suggests that other factors in poverty, such as inadequate nutrition, are also influential. On the whole, however, Hart and Wright incline to the view that a working man with an increase in income would better guard his family against phthisis by spending the extra on improving their housing rather than on their food. At the same time they are careful to point out that no single cause will explain the present incidence and previous retardation in decline of phthisis mortality in young adults. There is undoubtedly a complex interaction of a number of factors, though amongst them Hart and Wright are not inclined to place the alleged decreased tuberculisation in childhood with a resulting reduced immunity in adolescence.

Put very briefly their general conclusions may be stated thus. At about the turn of the century the lack of improvement in the standard of living, and in housing, and the increase in the industrial employment of young women had a deleterious and selective effect upon the phthisis mortality of young adults; the sharp deterioration in the standard of living, and the food shortage, of the war years converted the already slackened rate of decline into an actual increase; these unfavourable reactions were unevenly distributed and can be shown to have been especially severe where social conditions, and most particularly housing, were poor.

THE DEBT OF SURGERY TO THE MAYOS

IN the artists' room of the Mayo Clinic there is a skeleton. At first sight it seems a commonplace object, an artist's model; but, if one knows its history, it expresses something of the romance which centres round the "Medical Mecca of Minnesota." The skeleton is that of an Indian chief who took part in an attack on Rochester at the time when the father of WILLIAM and CHARLES MAYO was the doctor of the little town. The doctor's portrait is there too—a sturdy bearded figure driving in his buggy through the shack-lined street of a typical settlement of the Middle West. How great is the change today! Rochester is a town given over to the pursuit of medicine. Great buildings house its clinics and accommodate its patients; great halls provide the auditorium for lectures and graduations; there are experimental farms and magnificent laboratories; and in all these are men and women, gathered from many lands, paying a tribute by their presence to this American creation.

But the MAYOS did something more than create a great medical centre; they laid down a principle. Disease may have its beginning as a single and individual thing, but it soon has repercussions; and today all agree that the ideal estimate of serious illness should imply a review of all systems—a collective study centring on the local error. This conception did not originate with the MAYOS but it was they who first established the organisation needed to act on it consistently. And they did more; for they brought its benefits within the reach of all, whatever their status and position. By applying the rule of payment according to means they maintained their patient's independence while ensuring the economic success of their experiment, and the plan was one that commended itself to their individualist and democratic fellow citizens. On the professional side an esential element in their progress was their ability to pick out, and attract, young men of promise and distinction, and in so doing they built up a team and a succession of teams that have maintained the standard first set. Today the surgical world has many leaders who owe their training and their efficiency to the lessons learnt in the Mayo Clinic, thanks in part to the system of fellowships and scholarships established there by the characteristic generosity of the founders.

Of their individual contributions to surgery it is difficult to write. Their motto might well be *ubique*, for at one time or another they influenced and advanced a great variety of surgical conditions and procedures. The name of W. J. MAYO will always be associated with the surgery of duodenal ulcer. With the late Lord MOYNIHAN he may be said to have crystallised current knowledge of this condition and to have put its surgery on a sound and reasonable basis; in the same way his work on diverticulitis will be remembered as a model of clinical accuracy and scientific reasoning. CHARLES MAYO's name is attached particularly perhaps to the surgery of the thyroid gland, which he popularised in the United States; but among such a plethora of contributions it seems futile to discriminate; there seems no end to the record, and to get an idea of the versatility of these two men it is only necessary to turn over the pages of such a book as Binney's "Operative Surgery." The real debt of surgery to the MAYOS, however, is not so much in advances of technique or clinical observation as in something bigger. In matters surgical they made the wilderness blossom as a rose, and they have left behind them high ideals, sound principles, useful methods, and a body of men enlivened by their courage.

NEW WHITE CITY

LONDON's biggest landlord, the L.C.C., has launched a project worthy of socialist Vienna. On the site of the old White City exhibition a new town of homes for more than 10,000 people is taking shape. In 1935 the council decided to acquire the site for housing purposes. Of the 52 acres, 45 have been set aside for flats; in all 2166 flats in five-story blocks are contemplated. One year ago construction began. On July 21 the Minister of Health opened the first section—1193 flats, with 3910 rooms, for 5800 people. Accommodation varies from one to five rooms. The larger flats have their own sun balconies and fitted kitchens connecting with the living rooms by sliding doors. Gas water-heaters, gas cookers and gas-ignited coke grates are installed. Rents will range from 5*s*. 6*d*. (exclusive of rates and water charges) for a one-room flat, including kitchen-recess, bathroom and lavatory, to 17*s*. 6*d*. for a five-room flat. As an integral part of the scheme, there will be schools and playgrounds, a clinic and a doctor's house, churches, an inn, shops, a community centre, an administration building and reading-rooms.

ANNOTATIONS

A WOMAN FOR THE G.M.C.?

"JUSTICE," said Lord Darling, "is, like the Ritz, open to all"; and membership of the General Medical Council is open to women. Indeed one woman was elected to it some years ago as a direct representative of medical practitioners in England and Wales, though she died before taking her seat. As was pointed out at the B.M.A. meeting in Aberdeen last week, any electing body can choose a woman, and if a woman is wanted the machinery for her election is fully available. No doubt that will satisfy the formalists; but in actual fact the immediate chances of a woman being elected to succeed Christine Murrell on the G.M.C. are little better than those of a woman succeeding Elizabeth Blackwell as a student of St. Bartholomew's Hospital. The B.M.A. was assured by several representatives, including the only woman speaker, Miss Beatrice Turner, that females desire no more than equality of opportunity, which (it was said) they already possess. How far this self-mortification is really prevalent among women doctors we do not pretend to judge; but we are not enamoured of machinery that does not work, and to any practical person interested in making the G.M.C. more representative it must seem an anomaly that in a profession with 6000 women members (out of 60,000) there should not be a single woman in the council of 39 which directs its education and discipline. All questions of administration and politics concern women as much as men; they are equally interested in the welfare of the community; and there is no doubt that their judgment and experience would be of value in the penal and disciplinary work of the council. Women are often called as witnesses; many of the complaints may be against women; and in all the really difficult cases women are concerned in one way or another. Of the existing council 27 are nominees of licensing bodies, which are unlikely to put in a woman, however eminent, as their only representative, and 7 are elected as direct representatives of practitioners in the several parts of the United Kingdom. Dr. Murrell was herself chosen as one of these representatives: before her election she had been a member for fifteen years of the metropolitan branch council of the B.M.A. and had presided over it; for eight years she had been a member of the B.M.A. council and she had served on fifteen of its committees and subcommittees. Her record of public work was outstanding and it may well be beyond the compass of later candidates. At all events the B.M.A. meeting, despite a motion that one of the nominees of the association should be a woman, decided at Aberdeen on male candidates, Mr. Bishop Harman and Dr. E. A. Gregg, for nomination to vacancies in the near future for direct representatives. There remains the fact that the Privy Council has the disposition of 5 seats, which it allots to supply the council with members from branches of the medical profession not otherwise represented there. It was the Privy Council which, in response to parliamentary pressure, and very wisely, appointed a lay member of the council, and we hope it will take the next suitable opportunity to fill this other conspicuous gap.

OCCUPATIONAL THERAPY

THE latest addition to the facilities for occupational therapy in Bristol is the Allendale Curative Workshop where equipment has been installed for treating patients, both "hospital" and private, at all stages of physical disabilities caused by accident or disease. The workshop, which is under the care of the staff of the Dorset House school of occupational therapy, will ultimately be developed into a full-time rehabilitation centre and a number of patients from the local fracture clinics have already passed through it. Last year Dr. Elizabeth Casson (*Med. Pr.* 1938, **197**, 265) outlined the work that has been done in this field for patients suffering from nervous disorders at Dorset House, for cases of rheumatic heart-disease and other medical conditions at Bristol General Hospital and Southmead, for cases of pulmonary tuberculosis at Ham Green, and for orthopædic cases at Bath Orthopædic Hospital. She laid down four principles on which the use of occupational therapy is based. First, it must be prescribed by the patient's medical practitioner in categorical terms. Secondly, the prescription must take due regard both of the individual patient's mental and physical make-up and of the nature and extent of his disability. Thirdly, it must be carried out by a specially trained therapist who has the necessary knowledge of anatomy, physiology and psychology, and a wide experience of crafts and occupations. Fourthly, it must be sufficiently engrossing to direct the patient's attention away from his disability. Dr. Casson urged that, apart from its use in hospitals and institutions, there is a wide opening for occupational therapy among private cases, where it can be provided by the hour in the patient's own home, in the same way that massage is given.

CONSTRICTIVE PERICARDITIS

FOUR years ago a paper by White[1] in these pages excited considerable interest in the syndrome of chronic constrictive pericarditis, and since then a number of operations have been performed for the relief of an otherwise incurable cardiac disability. The publication by Heuer and Stewart[2] of seven consecutive and successful operations of this kind merits attention because it brings out several new points in both diagnosis and treatment. The improvement they describe and illustrate by photographs is so striking that their paper should also help to remind the practitioner of the existence of the syndrome and the necessity of taking it into account in all cases of persistent ascites. The presence of a pericardial scar should always be suspected where there is ascites and enlargement of the liver in the absence of the commoner causes of congestive heart failure. The diagnosis is established by direct measurement of the venous pressure, which is always increased, and by a series of other findings, which include a pulse that is small in volume and an electrocardiogram of low voltage. The radiograms show a cardiac silhouette that is either smaller than normal or at the most moderately enlarged, and in some cases deposits of calcium may be clearly seen especially in the lateral view. Under the fluoroscope it may sometimes be observed that contraction of the several chambers of the heart is much diminished. In the cases recorded by Heuer and Stewart careful medical treatment preceded operation, the measures employed including complete rest in bed on a diet low in salt-content but with a high protein component. Paracentesis of the ascitic fluid was also carried out, and free fluid

1. White, P. D., *Lancet*, 1935, **2**, 539.
2. Heuer, G. J., and Stewart, H. J., *Surg. Gynec. Obstet.* 1939, **68**, 929.

in the tissue spaces was eliminated as far as possible by giving Mercupurin intravenously. The operations were done under oxygen and ether by the intratracheal method, so that positive pressure was available in the event of laceration of the left pleural reflexion. The pericardium was exposed by resection of the second to the fifth costal cartilages together with short segments of the corresponding ribs on the left side, and it is Heuer's practice to preserve the perichondrium and periosteum. He finds it possible after freeing the pleura from the left surface of the pericardium to obtain access to the right surface of the heart by depressing the heart so that there is a space between it and the sternum. The pericardium is incised over the left ventricle. This chamber is freed and then the dissection is carried out over the right ventricle. No attempt is made to free the pericardium above the level of the auriculo-ventricular sulcus. The wound is closed without drainage. Several interesting facts emerge from the detailed case-histories. In one instance microscopical examination showed that operation had been done for a tuberculous pericarditis, yet contrary to general experience the patient was cured. In another patient improvement was gradual and the cardiovascular derangement did not completely disappear for a year but more usually the effects of the operation were immediate. This is one of the few procedures, either medical or surgical, capable of transforming a bedridden patient into a man fit to engage in vigorous athletics.

NERVOUS COMPLICATIONS OF SULPHONAMIDE THERAPY

ADVANCES in chemotherapy seem inevitably to be followed by a tale of sporadic mishaps, and the sulphonamides have not enjoyed exemption in this respect. A variety of complications have been reported ranging from blood changes, such as sulphæmoglobinæmia, acidosis, anæmia and leucopenia, to skin rashes of different kinds with or without features suggestive of serum-sickness, and these have lately been reviewed by Holman and Duff.[1] Their comment that the nervous system in man is in general little affected by these drugs is undoubtedly correct, but Dr. J. H. Fisher and Dr. J. R. Gilmour show in their paper on p. 301 of this issue that the central nervous system is not immune. Their fatal case is of considerable pathological interest in that the spinal cord, which alone was affected, showed changes that have previously been described after antirabic treatment and spinal anæsthesia and in encephalomyelitis following smallpox. Perivascular areas of demyelination were a conspicuous feature. That these were secondary to vascular damage is strongly suggested by the necrosis and inflammatory infiltration of certain of the thrombosed vessels. The massive softening of the lumbar enlargement is thus explicable as an infarct and the term myelomalacia is a suitable term for this condition rather than myelitis, which implies a primary inflammation.

Why such a pathological sequence should crop up as a rare complication of some disease or form of therapy it is difficult to understand; in attributing it to idiosyncrasy we advance no further. It has been argued that such reactions are allergic. While this explanation does not cover all the observed facts in the reported cases it may reasonably be advanced in connexion with Fisher's two patients. In these symptoms of nervous complications arose 14 and 6 days respectively after the administration of sulphonamide was begun, a period at which an antigen-antibody reaction might be anticipated. The possibility that the sulphonamides may have some antigenic effect can hardly be doubted in view of the demonstrations by Landsteiner and his co-workers of such properties in organic compounds of relatively simple composition, notably the arsphenamines. The pathogenesis of the encephalomyelitis that may complicate vaccination, smallpox and measles has never been satisfactorily elucidated. Efforts to demonstrate virus activity by transmission experiments have failed and have failed once more in Fisher's first case. The possibility that all these conditions are dependent on sensitisation has been suggested on clinical grounds and deserves further consideration.

1. Holman, W. L., and Duff, G. L., *Amer. J. med. Sci.* 1938, **195**, 379.

JOHNS HOPKINS JUBILEE

IN May, 1889, the Johns Hopkins Hospital was opened and fifty years later its famous Bulletin[1] has reprinted the addresses given at the opening by the three men who translated Hopkins's ideas into fact. Johns Hopkins, as Francis King, John Billings and Daniel Gilman told their audience, wished that his hospital should compare favourably with any in his own country or Europe. He was careful to leave his trustees almost entire freedom in their methods and designs. In two things only he anticipated their decisions; he provided a splendid site and willed that his hospital and medical school should constitute the medical department of his university. The board of trustees were worthy of his confidence. As we look back on this half-century and read in their own words the hopes and aims which inspired them there rise again to our minds the old familiar phrases—"Wisdom hath builded her house; she hath hewn out the seven pillars. . . . through wisdom is an house builded, and by understanding it is established; and by knowledge shall the chambers be filled with all precious and pleasant riches." The fame of Johns Hopkins has gone out into all lands, and the aims and inspiration of the founder and his trustees have proved a beneficent stimulus to medicine throughout the civilised world. Johns Hopkins dreamed a dream, as did Rahere in an earlier century, and his dream has been translated to the great hospital which, like Milton's eagle, now "mews his mighty youth."

BILATERAL PLEURAL EFFUSION

AT any stage of tuberçulosis bilateral pleural effusion may occur, but setting aside tuberculous polyserositis and winter influenzal outbreaks in tuberculous persons the condition has not often been described. As a complication of chronic pulmonary tuberculosis it is rare, because the pleural cavity becomes partially or wholly obliterated by adhesions from repeated attacks of dry pleurisy. Many years ago Wilson Fox noted that 4 per cent. of his cases of phthisis had bilateral pleurisy. Wilson[2] has recently reported ten instances of bilateral pleural effusion accompanying pulmonary tuberculosis in a series of 1552 persons admitted to the Gayford Farm Sanatorium, Connecticut, during a ten-year period 1928–38. In seven there was definite involvement of both lungs beneath, three having pericardial involvement, one a peritoneal effusion also, and another concomitant bone and joint tuberculosis. A coincident effusion into the pericardial sac is not surprising and merely

1. *Bull. Johns Hopk. Hosp.* 1939, **65**, 3.
2. Wilson, G. C., *Amer. Rev. Tuberc.* 1939, **39**, 745.

indicates that death is not far off. Wilson also noted in his series four instances of bilateral effusion without involvement of the lung parenchyma, one accompanying a tuberculous knee-joint, another a tuberculous kidney, a third iritis and a fourth acute arthritis of fingers and toes, though the tuberculous ætiology of the last two cases was considered doubtful. It is remarkable that so few examples have been recorded as complications of artificial pneumothorax treatment. Wilson states that Forlanini never met with one among the hundreds of patients that he treated, that Saugman had none, and that Braun and Spengler failed to find any records in the literature. The modern practice of producing a bilateral partial collapse may possibly lead to this embarrassing complication.

Bilateral pleural effusion appearing like a bolt from the blue in a previously healthy person is of course another story and fortunately a very exceptional one. In the present issue we publish a record of such a case by G. Hurrell and E. F. Dawson-Walker, in which death followed from terminal miliary tuberculosis, the pleuræ showing at autopsy the oldest lesions. Here the pleural effusion occurred early. No Ghon focus is recorded, unless a caseous nodule noted in the right interlobar septum be regarded as one; but the so-called primary foci, often multiple, are common in the subpleural region, and those pleural effusions which usher in a tuberculous illness probably result therefrom. The word allergy is misused and overworked. Employing it in a broad sense to include exudative lesions of serous membranes in all post-primary stages, there may be an early phase soon after the formation of the primary focus and an intermediate one complicating a later lesion, besides those direct extensions to the pleura in the final stages of the disease. Bacteriological and immunological characters of the fluid often differ in these three phases.

SUPPLY OF MIDWIVES

THE annual report of the Royal College of Obstetricians and Gynæcologists contains a memorandum by Mr. Arnold Walker on the staffing of maternity institutions. This was drawn up at the request of the college owing to the difficulties experienced by voluntary maternity hospitals in obtaining an adequate supply of midwives and pupils. The memorandum points out that there is no shortage of midwives in the country—the number on the roll is far in excess of requirements—and any difficulties experienced in obtaining applicants for vacant posts can only be due to the greater attractions that other forms of employment offer to the state-registered nurse who is also a midwife. Mr. Walker compares the prospects, responsibilities, and social and recreational amenities enjoyed by a nurse who takes up a career in midwifery with those of one who remains a general nurse, or becomes a health visitor, and shows clearly why there is no rush to join the midwifery profession.

With regard to pupil midwives, the factors to which he ascribes the shortage in voluntary hospitals in particular are, first, the increase in the number of cases admitted to municipal maternity beds from 60,000 to 123,000 in seven years; secondly, the new training rules of the Central Midwives Board; and thirdly, the introduction of the 48-hour week for nurses. The increase in the number of municipal beds has naturally resulted in a corresponding increase in the number of pupils trained in municipal hospitals. But this has not been accompanied by any falling off in the number trained in voluntary hospitals, the number of pupils trained each year has steadily risen in both groups of hospitals roughly in accordance with the work done. Under the new rules which came into force last summer the length of training of a midwife was doubled, and it was only to be expected that a large number of pupils would come forward to complete their training before that date. Roughly half a normal year's supply of pupils was used up in this way. The slump in entrants that followed was less serious than many had anticipated, and, as every pupil now spends longer in the wards than before, the units of labour represented by the pupils entering the schools had almost reached the 1936 level by May of this year. Their distribution, however, between municipal and voluntary schools shows a definite trend towards the municipal. London voluntary hospitals in particular have done badly. The explanation is undoubtedly financial, and if voluntary institutions are to obtain the pupils they require they will have to offer terms comparable with those offered by municipal institutions. The training is now divided into two periods taken at different schools. The first period is taken entirely in the larger hospitals and roughly corresponds to the old training. The second may be described as an apprenticeship and entails at least three months on the district. Though in order to register as a midwife both parts must be taken, the first is all that should be regarded as necessary for the higher nursing posts which do not involve the regular practice of midwifery. If this is generally realised the new rules should not place any additional burden on the majority of students and should have but little effect on the staffing of institutions. Mr. Walker points out that the Midwives Act, 1936, can have had no adverse effect on the supply of pupils. It has done much to improve the conditions of the midwifery profession and should be the means of attracting pupils rather than the reverse.

Mr. Walker concludes that although the immediate shortage of pupils is temporary, there is likely to be a more permanent shortage on account of the great increase in institutional confinements which demand a corresponding increase in nursing staffs. To meet this shortage, which includes both trained midwives and pupils, the conditions of service for both must be made more attractive. The suggestion that maternity nursing should form part of the training of every general nurse is, he thinks, subject to grave objections when considered in detail.

YELLOW FEVER BY MOUTH

UP to the present time the only insect vectors of yellow fever which have been found naturally infected are *Aedes ægypti* in Africa and South America and *A. leucocelænus* and *Hæmagogus capricorni* in South America. The mosquito can apparently only be infected by sucking blood from an infected man or monkey during the comparatively short period that the virus is circulating in the peripheral blood-stream. This fact, combined with the short life of the mosquito, makes it very difficult to account for the persistence of yellow fever in certain rural areas during dry seasons, when mosquitoes are either absent or present only in small numbers. It has therefore been suggested that other insect vectors of yellow fever may exist which either live longer than mosquitoes or transmit the virus hereditarily. Recently Findlay and MacCallum [1] have shown for the first time that it is possible to infect both the Indian

1. Findlay, G. M., and MacCallum, F. O., *J. Path. Bact.* 1939, 49, 53.

rhesus monkey (*Macaca mulatta*) and the African guenon (*Cercopithecus æthiops*) by putting yellow-fever virus into the gastro-intestinal tract through a stomach-tube. They have also found that virulent pantropic yellow-fever virus can survive for at least 15 days in the cockroach, *Blatella germanica*. Taking these two findings together, non-biting arthropods must be considered as possible vectors of yellow fever, especially as many species of monkeys are known to eat grubs and insects in addition to their mainly vegetarian diet.

Since the first isolation of the yellow-fever virus, continually improved methods for the immunisation of human beings against the disease have been evolved. The inoculation of dead virus, even in large quantities, has been found to be quite ineffective either in protecting experimental animals from the disease or producing immune bodies in the blood of humans. The aim has therefore been to secure a strain of living virus sufficiently attenuated to give satisfactory immunity without producing marked reactions. Such an attenuation was found to occur after many passages through tissue culture with minced chicken embryo, first carried out by Lloyd, Theiler and Ricci.[2] At first it was thought necessary to give large amounts of immune serum at the same time as the virus. This was highly unsatisfactory, both because of the discomfort to the patient and the difficulties of obtaining large quantities of human immune serum. For over two years now the virus has been given subcutaneously without immune serum both in America and London with good results and little after-effect. However, the finding of Findlay and MacCallum that monkeys can be immunised by oral administration of their vaccine virus opens up the possibility of human immunisation by this route. This would greatly facilitate the administration of the vaccine especially under jungle conditions. So far attempts at human oral immunisation have failed, probably because the virus is destroyed by hydrochloric acid.

2. Lloyd, W., Theiler, M., and Ricci, N. I., *Trans. R. Soc. trop. med. Hyg.* 1936, **29**, 481.

MARGARET SANGER

FEW of us are so lacking in the spirit of adventure that we cannot enjoy reading about the work of pioneers. Margaret Sanger, pioneer of birth-control in the United States, was born to poverty and membership of a long family. From an artistic and erratic father, a friend of Robert Ingersoll, she early imbibed a political philosophy essentially radical in outlook. Later, under hard and primitive conditions, she trained as a nurse. This experience, coupled with her early upbringing and subsequent work in the slums of New York, provided an ideal culture-medium for the growth of feministic and other "advanced" ideas. Convinced that family limitation was an urgent and necessary step in the progress of human welfare, she set to work, in defiance of the law, to spread information about birth-control among working-class mothers. Such conduct naturally brought her to grips with the Federal Government, and, to avoid trial and imprisonment, she fled first to Canada and later to Europe where she continued her work. In England especially she received much sympathy and encouragement from many distinguished persons, among them Havelock Ellis, H. G. Wells, and Lord Dawson of Penn. So dominated was she by the importance of her task that she became estranged from her husband—who incidentally suffered imprisonment for forwarding one of her pamphlets through the post—and was obliged to remain separated from her three children to whom she was devoted. After visiting China, India and Japan, she returned at length to the United States where she stood trial and was put in gaol rather than abandon the cause she had at heart. These are a few of the facts revealed in an autobiography [1] written with skill, modesty, humour and simplicity. It is the story of a long and ultimately successful fight for an idea, waged with quiet persistence by a physically frail woman who hated the limelight.

On Aug. 11 Prof. G. GREY TURNER, of the British Postgraduate Medical School, is sailing for South America on behalf of the British Council, which endeavours to promote professional contacts with foreign countries. He will visit Buenos Aires, Rosario, Córdoba, Montevideo and Chile, and will return in October via Canada and the United States.

At a meeting of the council of the Royal College of Surgeons of England held on July 31 it was decided to apply for a supplemental charter to give the college power to grant a higher dental diploma entitled "master surgeon dentist." The college will also ask for power to elect annually to the fellowship not more than four members of the college of 20 years' standing.

The death is announced of Prof. RICARDO JORGE, professor of zoology and anthropology in the University of Lisbon, and formerly president of the public-health council of Portugal. For many years he was Portugal's delegate to the Office International d'Hygiène publique and he was recognised as an authority on smallpox and postvaccinal encephalitis.

INDEX TO "THE LANCET," VOL. I, 1939

THE Index and Title-page to Vol. I, 1939, which was completed with the issue of June 24, is now ready. A copy will be sent gratis to subscribers on receipt of a postcard addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

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1. Margaret Sanger. London: Victor Gollancz, 1939. Pp. 494. 16s.

THE LANCET 100 YEARS AGO

August 3, 1839, *p.* 693.

From the evidence of Sir Astley Cooper before a parliamentary committee on medical education.

"If I had a son to educate to the profession, I should give him a preliminary education, which should continue to 18 years. Besides what boys are generally taught, that preliminary education should comprehend Latin sufficient for medical purposes, enough Greek for him clearly to understand the derivation of the terms employed in science (as it facilitates exceedingly the acquirement of medical knowledge), and mathematics to a certain extent, to teach him how to reason. Having thus educated him in a preliminary way, I should put him for seven years to some hospital. * * * Whilst he was engaged as a pupil I should be disposed to send him for a season to Edinburgh, principally with a view to his following a course of clinical teaching. * * * After having passed a season at Edinburgh, he should spend, I am disposed to think, the seventh or last year of his education abroad; and that would bring him to the age of 25. . . ."

SPECIAL ARTICLES

BRITISH MEDICAL ASSOCIATION

MEETING IN ABERDEEN

(*Continued from p. 274*)

THE association's plan for a general medical service for the nation brings into health insurance not only the dependants of those now insured but also everyone of similar economic standing and everyone now attended under public assistance. Some of the Scottish divisions are not sure that contributory insurance is the best means of providing medical care for so large a proportion of the population.

Capitation Fees or Salaried Service?

At the representative meeting Dr. MARGARET MARTIN, for Edinburgh, suggested that it might be better if the work were paid for directly by the Government. She objected to the present contributory insurance, with its per-capita payment, because it does not cover the family as a unit, because it mixes financial and medical benefit, because it offers no advantage to the doctor of special ability or long experience, and because it makes no provision for pensions or superannuation allowances for practitioners. The insurance principle, she said, is suited to a limited class and a limited risk, but it becomes less and less applicable as the risk covered grows greater. The only alternative to capitation-fee payment that had so far been proposed was a whole-time salaried service; but part-time salaried work might prove a solution, compatible with the ideals of the profession and meeting the needs of the public. In the Highlands and Islands Medical Service Scotland could show good results from partly salaried practice. Having worked both for salaries and for capitation fees she had found no difference as regards her independence; indeed in insurance practice she had been much hampered. A salaried service, preserving free choice of doctor, could vary remuneration according to ability and experience and could offer pensions. Its management, Edinburgh thought, should be based on hospital regions, and should be in the hands of specially constituted health committees rather than committees of the local authorities.

Dr. E. R. C. WALKER, for Aberdeen, pointed out that a great many intelligent people, both lay and medical, are interested in plans for a more comprehensive medical service. Opinions differed among doctors as among laymen, and it would be unfortunate if the B.M.A. were to take a hard-and-fast line. He sometimes found it awkward to defend the association's policy, because the arguments in favour of its decision to advocate extension of insurance with per-capita payment had never been set out at length. The type of administration recommended was held by some to be unworkable, and there was a large body of opinion in favour of alternatives. The association would suffer in reputation if at this stage it got into a position from which it refused to move.

The Chairman (Dr. H. G. DAIN) said that the finance of the general medical service scheme is already being considered by a committee, and to give them fresh instructions might be inadvisable. Dr. A. H. MACKLIN, on the other hand, believed the association should encourage constructive critics to work out their ideas more fully. Dr. W. J. S. CAMERON found it significant that the views put forward last year by Glasgow should now be supported by representatives of Edinburgh, Aberdeen, and Dundee—the other three big cities of the north. His explanation was that Scotland has learnt from its opening skirmish over the national maternity scheme. There was a feeling that the plans for a general medical service sacrifice too much to "the general-practitioner principle."

Sir HENRY BRACKENBURY remarked that though these plans, for historical reasons, do not recommend ad-hoc administrative bodies for England there was no reason why different arrangements should not be devised in Scotland. As for finance, it was no business of doctors to decide how the state should raise the money paid them, but only how it should distribute that money. For twelve years the association had consistently opposed the grading of the profession into a civil service paid by salary; for such a change would alter the character of the service given. Why should the council be asked to inquire into the merits of a policy that was the direct opposite of the one the association had adopted? Dr. WALKER replied that if the council is convinced of its rightness it should not object to giving a reasoned statement of its opinion. If the B.M.A. were to entrench itself in one position, heaven help it. This was no time for dogmatic ex-cathedra statements, and it was vitally important that the association should run no risk of a split.

The meeting agreed with Dr. Walker that the council should be asked to consider and report on the following modifications:—

1. Remuneration of medical personnel by graded and adjusted salary with pension.
2. Organisation of the medical service on a regional basis, centred on base hospitals, as designated in the B.M.A. medical policy.
3. Ad-hoc administration corresponding to the regional organisation;

and to remit to the Scottish committee to report similarly on the application of such modifications in Scotland.

Attempted Suicide and the Law

Dr. J. A. PRIDHAM, for Dorset, contrasted the sympathetic attitude of the law towards successful suicide with its behaviour towards people who tried to kill themselves but failed. To attempt suicide was a misdemeanour; the police waited at the recovering patient's bedside to take a statement, and he might be brought before the magistrates and punished. Recently the chairman of the bench at Weymouth had publicly protested when confronted with a post-encephalitic who had several times attempted suicide. On being told of this case the Home Secretary had expressed full sympathy with the magistrate's view, and agreed that suicide as a rule calls for protection and sympathy rather than punishment. He had asked his correspondent for suggestions for alteration in the law, and Dr. Pridham believed the time opportune for the council of the B.M.A. to put forward such suggestions. If something could be done the B.M.A. would reap the gratitude of the public.

Dr. R. G. GORDON (chairman of the mental-health committee) said that such an inquiry need not necessarily take much time, for the National Council for Mental Hygiene had already collected much information. Sir KAYE LE FLEMING (chairman of council) also accepted the proposition, but did not view it lightly, since the principle concerned is applicable to other grades of offence. "We are coming rapidly to agreement," he said, "that in a

large section of wrong-doing, from suicide even to the difficult boy at school, we are dealing with a mental imbalance of some kind where medical help is most likely to be of practical service." Suicide was near one end of a very long scale.

The council was asked to report on the advisability of altering the law.

Psychotherapy by Laymen

Dr. GORDON reviewed the pros and cons of recognising mental treatment by trained laymen. A very large number of people, he said, would benefit from psychotherapy, and comparatively few medical men and women were able to give it. Many of the patients at present untreated could be helped by the trained layman working under the supervision of the doctor. The clergy were often peculiarly fitted for such work, and applications for guidance had come from the churches—especially the Anglicans and the Free Churches; for the Roman Catholics and Church of Scotland, though they thought their clergy should be instructed in psychology, did not want them to set up as psychotherapists. So many non-doctors were now in psychological practice that it might be well to secure some control of the stream before it became a flood. One objection to any such recognition of lay psychotherapists was that their work is essentially the same as the medical psychotherapists'. (Whereas chiropodists do what doctors don't.) It was said they might multiply and squeeze the profession out of this part of practice; but their training could be made stiff, and no general admission was contemplated. A second argument was that to authorise such work by layman would lower the status of psychological medicine at the very moment when its importance as "the other half of medicine" is being realised. It was also said that as the experts have not agreed about the training of medical psychotherapists, they will never agree about the training of lay ones. Here again the answer was that there is no need to make the course of instruction easy; it might last two years, or it might last more; indeed it might be made so difficult that entrants would prefer to qualify as doctors. Having considered these facts the mental-health committee asked the representative body to approve the following principles:—

(i) No lay psychotherapist should undertake treatment unless (*a*) the patient has been recommended to him by a registered medical practitioner, or has had his case investigated by such a practitioner at the request of the lay psychotherapist; and (*b*) the lay psychotherapist has undergone a prescribed and approved course of training.

(ii) No medical practitioner should recommend a patient to a lay psychotherapist unless (*a*) the medical practitioner is himself a specialist in psychological medicine or has referred the case to such a specialist; and (*b*) the medical practitioner has satisfied himself that the lay psychotherapist has undergone a prescribed and approved course of training.

(iii) Where treatment is undertaken by a medical practitioner and a lay psychotherapist in coöperation, the responsibility for the case should lie with the medical practitioner and there should be consultation from time to time between the medical practitioner and the lay psychotherapist.

It further asked the representative body to express the opinion that "lay psychotherapists should undergo a special training of at least two years' duration on the basis of a curriculum to be agreed upon by the responsible bodies; and that the association take the initiative in putting machinery in motion for the establishment of approved courses of training."

Dr. MONA MACNAUGHTON, for Newcastle-on-Tyne, proposed that no action should be taken till a further report was received. The principles were too important for rapid decision, and meant another restriction on the work of general practitioners. Dr. A. A. EAGGER, supporting, disliked the wider opening of the door to lay competition. If there was a shortage of medical psychotherapists the B.M.A. should concentrate on means of inducing more students and doctors to take up this work—e.g., by courses at universities and by increasing salaries. The aim should be to raise its status; whereas the present proposals would lower it. He added that patients with mental disorder almost always have physical disorders demanding attention. Sir HENRY BRACKENBURY commended the proposed rules, not as a statement of principles but as a guide to conduct. They had been endorsed by the psychological-medicine group, and others outside. The association was being asked to say where it stood, and the question was becoming urgent. After Dr. GORDON had spoken of the risk that other bodies would take action if the B.M.A. did not do so, the meeting expressed its disapproval of mere postponement.

Marylebone, through Mr. A. M. A. MOORE, then tried to amend the proposed principles by omitting the proviso in section (ii) that no practitioner should recommend a patient to a lay psychotherapist unless he is himself a specialist in psychological medicine or has referred the patient to a doctor who is. Mr. Moore did not want to see the general practitioner's hands tied; but Dr. RICHARD EAGER did not want to see the medical psychologist surrender one of his few perquisites. Sir HENRY BRACKENBURY was convinced that the primary place of medical psychologists must be preserved, and that it is not within the competence of the general practitioner to select cases suitable for lay psychotherapy. Dr. GORDON, while subscribing to the general principle that the registered practitioner is competent to do any kind of medical work, regarded this as an exception. The practitioner was not to blame for the inadequacy of teaching in psychological medicine when he was a student some years ago; nor for the general lack of opportunities later. But in fact he had seldom had a chance to fit himself for the very difficult task of deciding which patients (if any) are suitable for lay psychotherapy.—Marylebone's amendment was lost.

Dr. JOSEPH NUNAN was worried by the process of sanctification of various kinds of lay practice that began some years ago with the registration of medical auxiliaries and continued with the recognition of chiropodists. These latest proposals suggested a loss of self-confidence in the profession and a readiness to admit incompetence and failure. Dr. FRANK GRAY said that if doctors as a whole have not yet had adequate training in psychological medicine, was this a reason why other people should be given it? Dr. HARRY STALKER pointed out that the mental conflicts of a normal person are not readily distinguishable from early symptoms of disease. The lay psychotherapist must necessarily run counter to modern thought because he must dissociate mind from body. The pastoral psychotherapist, with his religious background, could not approach his patient in an altogether unemotional and "biological" way, and might cause distress. Mr MOORE said that the medical section of the British Psychological Society strongly condemned the proposals. Dr. H. S. HOWIE WOOD referred to the need for a very high standard of professional integrity in all who undertake psychotherapy, and Mr. L. R. BROSTER thought that, as endocrine disorder is a common cause of emotional change, a training in endocrinology as well as psychology would be required by the lay psychotherapist.

He agreed that much nervous illness goes untreated, but he thought laymen should facilitate medical treatment instead of undertaking treatment themselves.

Dr. GORDON, concluding the case for the mental-health committee's proposals, said that, before voting, the representatives should ask themselves three questions: (1) Are we doing our duty to the public at large if we confine the treatment of neurotic people to the small number of medical psychotherapists available now or in the next year or two? (2) Are there a number of these people whose disability largely turns on spiritual problems which they have to refer to their spiritual pastors; and, if so, ought these pastors to have some sort of medical training? (3) Is it desirable that the large body of lay psychologists already existing in this country should go forward without any medical control?

The meeting however had already made up its mind not to countenance lay psychotherapy on the terms proposed, and it rejected the draft principles by 102 votes to 75.

Subsistence Allowances for Representatives

Those who represent the divisions and branches at the annual meeting of the association go at their own expense. On Swansea moving that they should be paid a subsistence allowance, Dr. J. C. ARTHUR said he calculated that attendance cost him 7*s.* 6*d.* an hour, and since he was paying as much for his seat as for a theatre stall he would certainly not be prepared to apologise to the chairman if reproved for temporary absence. Dr. GEORGE LAURENCE spoke of the need for attendance by younger men and the greater choice of representatives that would be possible if some of the expenses were covered. Dr. GRAY defined "younger" in this connexion as "under 50"; this was the time of life at which men were usually meeting their heaviest expenses in the education of their children; and incidentally attendance at a meeting at the end of July usually prevented a holiday with the children. Dr. W. N. LEAK also supported the proposal, but another speaker thought the riper wisdom was found in the later age-groups. Dr. S. NOY SCOTT asked where the association would stop. Would it offer salaries to the council? And pensions? He feared a descent to the level of the House of Commons. Dr. DOROTHY MASON said that St. Pancras would be glad if representatives were paid, but hoped the annual subscription would not be raised.—The motion was lost.

Publicity

Dr. H. G. DAIN, as chairman of the propaganda committee, reported that despite difficulties much is being done to improve relations between the public as a whole and the profession as a whole. The committee was trying to get a better atmosphere "not for the association but for doctors." Dr. T. A. MORRISON criticised the spending of money on a conference on nutrition and on publicity for safe milk; this was work for the Ministry of Health and not for the B.M.A. Dr. A. W. GARDNER was also dissatisfied; but Mr. ZACHARY COPE thought the prestige of the association was rapidly rising. Dr. S. W. SWINDELLS spoke of the value of the nutrition conference, which cost the association £200. He kept an advertisement of the B.M.A. cookery-book in his consulting-room and had sold about 150 copies; his patients said "it is good of you doctors to take an interest in things like this for us." Dr. H. S. HOWIE WOOD had noted the failure of some of the older practitioners to distinguish between advertisement on behalf of the profession and advertisement by individuals. To issue information about the safety of milk or the stocking of emergency larders was useful because the public knew that here the doctor had no axe to grind. Dr. A. S. WILSON suggested that money might well be spent in developing an inexpensive method of pasteurising milk efficiently and in showing the farmers how this could be done; many farmers and milk distributors were antagonised by the propaganda of the association. Dr. DAIN pointed out that if the B.M.A. said that unsafe milk should not be sold the people who produce and distribute it must inevitably be annoyed. Dr. T. H. C. DERHAM urged that doctors should become members of their local corporations and insurance committees, for they could thus influence people who knew and trusted them and believed what they said. Dame LOUISE MCILROY said that governments would listen to voters when they would not listen to the medical profession, and the propaganda committee should try to interest the general public in prevention.

Proprietary Medicines

A joint conference of representatives of the B.M.A. and the Pharmaceutical Society has been studying the possibility of making an approved list of proprietary medicines, but the council has reluctantly decided not to go forward with this at present. This decision was criticised by Bournemouth, which considers action overdue, in view of "the constantly augmented flood of circulars now delivered daily by post." Dr. WALTER ASTEN said that unfortunately both practitioners and consultants were unduly suggestible, and an authoritative list was badly needed. Sir KAYE LE FLEMING replied that the lowest estimate of the cost of a limited scheme was £2000 a year, and the Pharmaceutical Society, being (like the association) committed to large expenditure on new buildings, could not contribute a penny. Dr. N. C. SIMPSON proposed, but did not press, an amendment from West Suffolk suggesting a limited investigation of hormones, vitamins and barbiturates; he thought the B.M.A. would much better spend money on a useful object like this than on propaganda. Sir EWEN MACLEAN (chairman of the science committee) said that the work of the council of pharmacy and chemistry of the American Medical Association, despite the gratuitous service of experts, cost £10,000 to £14,000 a year; and the American public was still ridden by proprietary medicines. It would not be wise to finance inquiries out of payments by drug manufacturers, and the council felt that nothing more can at present be done.—The representative body regretfully concurred.

Radiographers: Radiological Reports

Two resolutions affecting radiologists were adopted. The first declares that, while there is no objection to doctors employing non-medical radiographers to take films, the responsibility for interpreting such films must rest with a radiologist or other qualified medical practitioner. The second, which concerns reports required by insurance companies, or for other purposes connected with litigation, runs as follows:—

1. A radiograph taken in hospital is part of the hospital record of the case and is the property of the hospital. It should not be used for any other purpose without the consent of the hospital, the patient, and the radiologist.

2. Radiological reports are intended for use in the treatment of the patient and should not be communicated to a third party without the consent of the patient. The rules of the hospital should show clearly which officer is charged with the duty of making reports on hospital

cases to outside bodies or persons, and the responsible officer should, in every case in which a radiological report is involved, consult and secure the assent of the radiologist before making his report.

3. The person or body requesting the radiological report should pay an adequate fee to the radiologist.

4. Re-examination for medicolegal purposes should be conducted by a radiologist in his private capacity.

In introducing these principles Prof. A. H. BURGESS (chairman of the special-practice committee) said that senior resident officers, or members of the staff of hospitals, often use—as the basis or most important part of their reports—the findings of a radiologist. The latter complains that he is seldom even consulted, far less paid a fee.

Local and National Health Insurance

Many divisions submitted resolutions urging development and extension of the public medical services established by the profession. These resolutions commended the services as a means of maintaining the position of the general practitioner, of implementing the association's policy, and of preparing the ground for the projected general medical service. One speaker felt that the council, in its advocacy of the larger scheme, has lost its enthusiasm for the local public medical services; yet these were the salvation of the practitioner and their failure would be interpreted by the Ministry of Health as evidence that the public no longer wants the private doctor, preferring clinics. Dr. J. W. BONE (chairman of the general-practice committee) maintained that, on the contrary, the council has fostered these services in every possible way, and Sir KAYE LE FLEMING was astonished that anyone could doubt it.

As chairman of the insurance acts committee Dr. E. A. GREGG accepted a motion from Leeds demanding further consideration for the provision of consultant and laboratory services to insured persons.

Dr. G. DE SWIET, for Kensington, wanted the representative body to express misgivings about friendly societies. His motion referred to inequitable distribution of benefits by the societies, their cumbersomeness, and their tendency to hoard money, and he thought their multiple administration expensive and their selection of members incompatible with a truly comprehensive scheme. Dr. DAIN, however, said that the association has no control over friendly societies, and the meeting was not at the moment disposed to discuss Dr. de Swiet's strictures on the present arrangements.

Dr. C. W. SOMERVILLE, for the Lothians, suggested that a conference of Scottish panel committees and divisions should be held each year. He spoke of the remoteness of London and the apathy or antipathy that it engenders among many Scottish practitioners. Dr. E. K. MACKENZIE supported him with passion, and, though Dr. J. B. MILLER thought that more representation would increase the difficulty of discovering the wishes of those represented, the suggestion was referred to the council.

Short or Long Postgraduate Courses?

The postgraduate instruction of panel practitioners was debated on a motion by Tunbridge Wells recommending extended courses of study at local hospitals as a supplement to intensive courses at central schools. The plan approved in Kent, said Dr. A. M. POLLOCK, is to hold several courses a year, each consisting of twelve weekly sessions of three hours, divided into one-hour periods, in which demonstration-talks are given, with opportunity for discussion. In Kent there were 800 insurance doctors of whom only 49 last year found time to go to the intensive courses; and some who went felt that so much was crowded into the fortnight that in six months all was forgotten. The local course had the merit of promoting contact between practitioner and specialist, it obliged the teacher to brush up his knowledge before addressing a critical audience of colleagues in general practice, and it was cheaper since no locums or railway tickets or subsistence allowances or lecturers' fees were required.

Dr. J. E. STACEY said that for many years such a course has been held in Sheffield every six months; it lasts eight weeks with two 1½-hour sessions twice a week. Comparing the results with those of the intensive courses lately started he thought the practitioner gets more benefit from the latter. The eight weeks' course beginning with 50 attenders was apt to end with 7 or 8; whereas people felt it incumbent on them to attend throughout the fortnight of an intensive course. In a fortnight the practitioner could renovate his knowledge of all branches of medicine, whereas a long course was apt to turn him into a consultoid.

Dr. GREGG said that the British Postgraduate Medical School has arranged an extended course for London practitioners, and next year four more would be undertaken in the provinces. He was sure the Ministry of Health would listen to suggestions.

Fees and Rates of Pay

The vexed question of the fee payable to the anæsthetist at a dental operation on an insured person has been before the general-practice committee and Dr. BONE put forward a tariff that may be summarised as follows:—

Where the practitioner provides the gas and apparatus.—For administration of nitrous oxide or a similar anæsthetic, ceasing when the operation begins, 10*s.* 6*d.* for one patient or 7*s.* 6*d.* per patient if more than one is treated. "For other administrations, whatever the anæsthetic, the fee should be one guinea."

Where the dentist provides the gas and apparatus.—Extraction of 1–8 teeth, 10*s.* 6*d.* (or 7*s.* 6*d.* if more than one patient is treated); 9–12 teeth, 12*s.* 6*d.*; 13–16 teeth, 17*s.* 6*d.*; 17 or more teeth, £1 1*s.*

Dr. A. S. WIGFIELD disliked variation of the fee according to the number of teeth removed; the doctor should be paid for administration of an anæsthetic and not on piece-work.—But the meeting accepted the tariff.

A motion also was passed saying that a minimum fee of a guinea should be payable for an hour's teaching in nursing and hygiene, for ambulance lectures, and for first-aid lectures to A.R.P. workers. Mr. G. F. LANGLEY wanted to excuse officers of the St. John Ambulance Association and similar bodies from demanding a fee from their own organisations, but Dr H. C. PURCER SMITH thought they could return it, and Dr. BONE said there was no obligation to accept it.

As regards the remuneration of medical men and women engaged in whole-time teaching or laboratory work the council was authorised, for the time being, to give effect to the following scale:—

Grade III (junior workers employed on a temporary basis: (*a*) workers employed in teaching or research institutions, with opportunities for study for the higher degrees or for research in a well-equipped laboratory; (*b*) workers not provided with such opportunities).—The minimum salary for grade III (*a*) shall be £250 per annum for a practitioner without experience, and £300 per annum for a practitioner who has held a resident hospital appointment. The minimum salary for grade III (*b*) shall be

£350. No person shall be employed in grade III for a total period of more than three years. These salaries shall not apply to appointments limited to a term not exceeding one year and not renewable.

Grade II (workers who have had three years' experience in grade III or in work of an equivalent character).—The minimum commencing salary shall be £450, rising by annual increments of £25 to £700. Previous service in this grade shall be reckoned in calculating the appropriate salary of a worker transferred to another university or institution to fill a similar post in the same grade.

Grade I (workers whose qualifications, duties and responsibilities justify a position of seniority in status and a higher remuneration, such as the reader or senior lecturer or senior assistant or non-professorial head of a department).—The minimum commencing salary shall be £750 and suitable increments shall be given for capability and length of service.

ANNUAL MEETING

At the formal annual meeting on July 25 Dr. Thomas Fraser, C.B.E., D.S.O., D.L., of Aberdeen, was invested with the president's badge by his predecessor, Dr. Colin Lindsay of Plymouth, and Sir Beckwith Whitehouse, president-elect, said a few words about Birmingham preparations for next year. At the resumed annual meeting held the same evening delegates from the Canadian Medical Association (Dr. F. G. Pedley) and the American Medical Association (Dr. Roger I. Lee) were introduced, together with foreign guests (Prof. Einar Meulengracht of Copenhagen, Dr. W. McK. Craig of Rochester, Minn., and Dr. Chevalier L. Jackson of Philadelphia) and representatives and delegates from the Empire overseas. The gold medal of the association was presented to Dr. C. O. Hawthorne (chairman of the representative body from 1928 to 1931), the Sir Charles Hastings clinical prize to Dr. Helen Jardine of Leyton, and the Middlemore prize to Mr. L. P. Jameson Evans. The President delivered his annual address (published in our last issue) and Dr. Dain moved a cordial vote of thanks.

Earlier in the day the University of Aberdeen had conferred the honorary degree of LL.D. on Dr. Fraser, Dr. Dain, Professor Meulengracht, and Sir James Elliott, F.R.A.C.S.

THE ANNUAL DINNER

An immense company sat down to dinner on July 27 in the municipal café near the beach, but in due time rose again to greet the Haggis, which was preceded by a piper but served, alas, as a very small savoury. The speeches began with the toast of Town and Gown by Dr. HAWTHORNE, with responses from the Lord Provost (Mr. Thomas Mitchell) and the Chancellor of the University (Lord Meston), after which the local alumni surprised their guests by singing a verse of Horace's *Integer Vitæ*. Mr. FREDERICK MARTIN was frank but friendly in proposing The British Medical Association, coupled with the name of Mr. H. S. Souttar, the new chairman of council, whom he claimed as the son of an Aberdonian. Mr. SOUTTAR, in his reply, produced evidence that the Government and the profession have confidence in the B.M.A. As for Mr. Martin's personal praises he recalled the reply of the spinster on the announcement of her marriage: "the rumour was untrue but she was grateful for the rumour." Prof. J. R. LEARMONTH, speaking of The Guests, was glad that year after year overseas delegates come to the association's meetings, subordinating sometimes race, sometimes creed, and sometimes even political opinions, because above all they wished to serve the cause of health throughout the world. Mr. R. G. BOOTHBY had asked a fellow M.P. what he should say; and received the reply "That depends on whether you want an anæsthetic in childbirth." Sir JAMES ELLIOTT wished that those who hold the citadel of the Empire would get to know more of those who hold the outposts. Finally Dr. H. EDGAR SMITH, in a speech of graceful and grateful appreciation, proposed The President. Emphasising his urbanity (remarkable in a rustic born outside the 12-mile limit of Aberdeen) and his lack of insularity (despite his preoccupation with the islands of Langerhans before the war and the isles of Greece during it), he summed up by saying that no-one better conforms to the policy of the B.M.A. that the general practitioner should be the keystone of the arch between the layman and the specialist.

At the end of the dinner Dr. FRASER gave the toast of Bon Accord (the Aberdeen motto): "Happy to meet; sorry to part; happy to meet again." During more than a week of gatherings—large and small, splendid and homely—Aberdeen expressed this hospitable spirit, and many members of the association must now add affection to the respect they previously had for Aberdonians. The charm of the city and countryside made it easy to understand, if not to share, the Lord Provost's ill-concealed belief that it is the best place on earth.

(*Reports of scientific sections appear on p. 315*)

APPOINTMENTS FOR HOSPITAL OUTPATIENTS

Mr. Alfred M. Lyons, a retired business man of Sydenham Hill, calculates that he has waited 300 hours on an outpatient bench in the past five years.[1] Mr. Lyons's case is by no means peculiar. To the great loss of working time which ill health steals from the nation must be added no small amount lost waiting in the outpatient departments of the voluntary hospitals of England. Among the ancient "chronics" an afternoon in outpatients has become a social occasion. For the working man and woman, however, it has all too often meant the loss of a job.

In the past, from time to time, efforts have been made to devise outpatient appointment systems, but few have survived to become an integral part of hospital life. For these falls by the wayside numerous causes have been given. Doctors are said to take no notice of them in sending their patients up to hospital. Patients are said to prefer to travel at lunch-time when cheap tram and bus fares can be got. It has even been argued that the chronic refuses to forgo her waiting. On at least one occasion a carefully thought-out system has been blackballed by medical conservatism. For the past five years however the Manchester Jewish Hospital has been working an extremely successful system of outpatient appointments. About 80,000 appointments are now made each year and general practitioners are encouraged to make first appointments for their patients over the telephone. Not more than 1 or 2 per cent. of patients fail to keep their appointments without letting the hospital know. The system is greatly appreciated by patients, employers, and even the honoraries, many of whom frequently ring up the hospital to find out how long their outpatients are likely to last, so that private work can be arranged accordingly. The system has enabled the hospital authorities to avoid an extensive reconstruction of the

1. *News Chronicle*, July 26.

outpatient department as there are now seldom more than ten or fifteen patients waiting at one time.

On July 18 University College Hospital introduced a similar system. Before starting, careful investigations were made to find out how many patients each honorary sees on an average in half an hour. It was found that surgeons averaged three and physicians two. Bookings are accordingly made at half-hour intervals for two or three patients. At first the system was applied only to old patients, who at each attendance booked an appointment for their next visit. It proved completely satisfactory and was therefore extended to new patients, and is now working for twenty-one outpatient clinics in all. Patients referred from casualty attend the appointments clerk and book a time to see the appropriate specialist. New outpatients may themselves ring up or write to the hospital suggesting when they would like to be seen and their convenience is as far as possible studied. In addition private doctors are invited to ring up Euston 5050 and ask for the appointments clerk at any time of the day or night, but preferably between 12 noon and 8 P.M., and already increasing numbers of doctors are availing themselves of this convenience for their patients. Waiting is not absolutely eliminated but is reduced from an average of three hours to under half an hour. The appointments list for the day enables the records department to put out on the doctor's desk the notes of all the patients expected and if any fail to appear the presence of the notes provides an automatic means of follow-up. Patients who attend without an appointment are placed at the end of the appointments list. So far the system is giving complete satisfaction.

Why has it taken so many years for this very obvious reform to reach fruition? The University College Hospital system will probably cost the authorities between £400 and £500 per annum in clerical fees, phone calls, stationery and postage. Attempts to operate an appointments system without special officers in charge is, we feel, doomed to failure. And in the past the unsatisfactory attempts which have been made to eliminate outpatient waiting have probably been wrecked by the attempts of hospital authorities to work the systems without spending money. In these days of planned utilisation of the nation's man-power, time saved for industry is national wealth. Money, then, spent on efficient hospital appointment systems is money well spent indeed. Already at St. Thomas's, as noted in our columns, an appointment system for old patients has been introduced. In the new Westminster a complete outpatient appointment system will be in operation shortly; at St. Mary's Hospital, Manchester, an appointments scheme has been in force since the beginning of the year.

It is to be hoped that the other voluntary hospitals will follow these excellent examples. The Emergency Bed Service has proved that the outside doctor is ready to coöperate with the hospitals for his acutely ill patients. The experience of University College suggests that he will do the same for his less urgent but no less important diagnostic problems.

"... We may safely say that, in the case of well over half of all the children educated in our elementary schools, their school life is something quite apart from their ordinary life, bearing about as much relation to it as an ordinary business man's churchgoing bears to his."—Dr. HARRY ROBERTS, *New Statesman*, July 29, 1939, p. 172.

WORLD CONFERENCE ON CRIPPLES

LONDON, JULY 16–22

Lord NUFFIELD and Mr. PAUL KING, president of the International Society for Crippled Children, welcomed the delegates to this conference at the official opening on July 17, when Mr. WALTER ELLIOT, Minister of Health, reviewed the rapid development of orthopædics in this country since the late war. He said that existing legislation, together with voluntary and municipal organisations throughout the country, had brought the solution of the problem of the ordinary cripple well within sight. But the industrial cripple presented more difficulty, and this was why an interdepartmental committee had been set up to inquire into the problem. The committee urged that fractures, the most important group of industrial injuries, should receive specialised treatment, and that additional rehabilitation centres were also required.

Mr. R. C. ELMSLIE, opening a discussion on preventive orthopædics in childhood, traced the diminution in the incidence of gross deformity during the 39 years since he first attended the orthopædic department of St. Bart's as a student. Three classes of deformity stood out—those due to rickets, scoliosis, and tuberculosis of the spine. With rickets it had been less the growth of our knowledge of the disease than the infant-welfare movement and an adequate milk-supply which had achieved success. Physical education was responsible for the present comparative rarity of scoliosis; for this we were first indebted to the Scandinavians. Although knowledge of the cause of tuberculosis failed to bring the much-needed specific remedy, it stimulated Robert Philip to found tuberculosis dispensaries in 1887 and led to statutory provision for treatment of all forms of the disease. This had undoubtedly contributed to the steady reduction in crippling due to tuberculosis. Finally, orthopædic services had enabled surgeons to treat crippling conditions before deformity has actually developed.

Contributing to a discussion on the education, vocational training and subsequent employment of the crippled child, Mr. CECIL MAUDSLAY (Board of Education) described the British system, and Dr. PAUL GUILDAL spoke of his life-long experience of work in Denmark. He said that what mattered was intelligent application of the system to the individual. The risk of comprehensive legislation is that it may produce undue segregation of physically handicapped children, so making them outcasts from normal society. Whenever possible the pre-school cripple should be cared for at home so that family ties and affection may develop in the normal way. Crippled school-children should be day-scholars unless their disability was such that travelling became a major problem. There should be separation of mentally-defective cripples from those of normal mentality. Vocational training should be pushed during the school period, since the crippled child's school-life is, on account of the treatment he must receive, always shorter than the normal period. Resident institutions ought to be as home-like as possible and the children should go home for their holidays. In short, every effort should be made to give the cripple the outlook of the normal citizen.

The case of the industrial cripple was discussed by Dr. ECKHARDT and Dr. LAUTERBACH, who described the excellent system now prevailing in Germany, and Mr. MAURICE STACK, of the International Labour

Office at Geneva, reviewed existing legislation and methods in Europe and the Americas. The position seemed to be that no one country had a perfect system (the perfect system was probably indefinable at present), but enough was known, and had been worked out in practice, to enable any country to frame laws that would give the industrial cripple the benefits he undoubtedly deserved. Progress depended less upon procedure than upon the spirit in which it was pursued. "The disabled of the industrial army," said Mr. Stack, "have a right to the same public concern as the war disabled. Industry cannot operate and produce its fruits if men are not willing to risk their lives and limbs in trades some of which are hardly less dangerous than battle itself."

NORWAY

(FROM OUR OWN CORRESPONDENT)

STERILISATION OF WOMEN

THE Norwegian sterilisation law reflects pretty accurately the ethical standards in vogue when it was framed. It permits sterilisation as a prophylactic of mental disease and of serious bodily disease in the prospective progeny, and when there are reasonable grounds for assuming that the woman will be unfit to care properly for her offspring. The possible medical indications include neurasthenia, anæmia, pulmonary tuberculosis, heart disease, mental disease and much else, and such social indications as unemployment or drunkenness on the part of the husband are also included. A careful study has been undertaken by Dr. Bernhard Paus of the 68 women sterilised at the Sauda Hospital between 1926 and 1938. In only 11 were the indications strictly medical, 5 of these being obstetrical or gynæcological cases and the remaining 6 cases of pulmonary tuberculosis. A follow-up study showed that in 15 cases sexual activity was diminished while in 7 it was increased, the increase being attributed as a rule to freedom from the fear of a new pregnancy. Mental conflicts with religious scruples often followed the operation, and in two cases the husbands were assailed by penitent after-thoughts, based on "religion" or frustration, the wife's sexual activity having become much reduced. There were four women who reported that they had lost much of their capacity for and pleasure in work. A surprising number of the patients replied of their own accord that healthy folk ought not to undergo the operation.

WEIL'S DISEASE

Until lately Weil's disease was looked on as a pathological curiosity in Norway, and only three cases have hitherto been published in which the diagnosis was confirmed by the demonstration of the leptospira. But the disease which seemed rare yesterday because it was overlooked has become almost common today. In the Ullevaal municipal hospital of Oslo seven cases have been observed since 1936, the diagnosis being confirmed bacteriologically in five. As in other countries, the disease seems to be much more common in men than in women or children, doubtless because their employment exposes them to infection. Of the seven Ullevaal cases described by Dr. O. Svaar-Seljesaeter in *Nordisk Medicin*, six were adult males. In one case the disease followed the bite of a rat, and some of the other patients had worked in rat-infested buildings. The highly polluted water of the Aker river, into which two of the patients had fallen, may well have been the source of the infection in them. It seems that we shall continue to harbour this disease as long as we harbour rats.

VERTEBRAL FRACTURES IN CONVULSION THERAPY

From Dr. Dedichen's private asylum—one of the few in Norway—come disquieting reports as to the frequency of fractures of the spine as a sequel to Cardiazol-shock treatment of various psychoses. Dr. Dedichen's first case was that of a patient who had been given cardiazol shock before his admission and who had suffered from such severe pain in the back that treatment had had to be discontinued. A radiological examination revealed three severe compression fractures. This observation set Dr. Dedichen examining all his cardiazol-treated patients for similar lesions. In a short time he had found as many as 6 such cases among 80 patients treated. Now seriously perturbed, he sounded one of his colleagues attached to another hospital where convulsion treatment had been given to several hundred patients. "Oh, yes," this doctor replied, "We have often had patients complaining of pain between the shoulders, but it is of no importance, and it is confined to the muscles." The tell-tale radiograms came as a disquieting shock. It is suggested that this accident can be prevented by never allowing the patient to double himself up during the treatment.

VACCINAL ENCEPHALITIS

Dr. P. M. Holst, who is in charge of Oslo's fever hospital, considers that the danger of vaccinal encephalitis has by no means passed, just because it enjoys less publicity in the press. In 1936 there was no such case in Oslo, but in 1937 there was one case which proved fatal, and in 1938 there were two cases, one of which ended in death. Between 1929 and 1933 there were eleven cases out of about 15,000 vaccinations in Oslo. In 1935 there were two fatal cases after only 355 vaccinations.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

DYNAMICS OF CROWD INFECTIONS

IN a Honyman Gillespie lecture in Edinburgh last week Dr. A. G. McKendrick said that random movement of human beings is a fundamental factor in epidemiology. Movements of individuals in a crowd may themselves be purposeful but the mass as a whole may be unpredictable. Most contacts in a crowd are random, but the behaviour of the whole human mass may depend on the same laws which govern the movements of the mass of molecules of a gas. The law of mass action seems to apply to human problems. The growth of organisms in broth is another example of mass action. The organisms increase in size by absorbing food, and divide by fission when they reach a certain size. The rate of the "reaction" depends on the number of organisms and the amount of foodstuff. This phenomenon is also seen in the spread of contagious disease and indeed in the spread of ideas.

The spread of disease through a community depends on many chance circumstances, including the random meetings of units of the community. In studying the course of epidemics it is possible to abstract the essentials, reduce them to diagram form and apply mathematical technique. The number of new cases of disease is proportional to the number who are sick and the number who are susceptible. The chances

of recovery and the chances of death are both proportional to the number of cases, though, of course, this excludes many important factors such as variations in susceptibility and crowding. Each disease has a certain threshold density in the population necessary for the development of an epidemic. If an epidemic is allowed to run its course in an isolated community, that is, one in which there are no births and no immigration, the curve of the number of susceptibles falls with the appearance of cases, crossing the threshold at the point at which the maximum number of cases occurs. Thereafter the number of cases decreases, but the curve of the number of susceptibles also continues to fall, until it straightens out as far below the threshold level as it was above it before the epidemic started. The epidemic exhausts itself long before all susceptibles are affected or the organism loses virulence. When new members are added to a community by birth or immigration the course of an epidemic is different. The curve of susceptibles fluctuates about the threshold level, falling below it when cases increase; this fall reduces the number of cases; then with the introduction of more susceptibles there is another increase in the number of cases. The oscillations would theoretically go on indefinitely, but actually they gradually become smaller and die away as the epidemic ceases. Each disease has its own threshold of susceptibility. If the infectivity is low the threshold is high and vice versa. The threshold of a community may be increased by cutting down the chances of infection by public-health measures; but continuous rigorous control of this artificial resistance is necessary, for if it falls an epidemic may be rapidly precipitated.

CAMPAIGN AGAINST RHEUMATISM

The idea of a national rheumatic service received a set-back when a deputation from the Scottish council of the textile trade unions was received by Mr. John Colville, M.P., secretary of state for Scotland. The deputation urged that, in view of the suffering and economic loss caused by rheumatism, a nation-wide system of rheumatic clinics should be established. According to the reports of the Department of Health for Scotland, rheumatism was responsible for about one-eighth of the total incapacitating sickness among the insured population. Mr. Colville, replying, said he was aware of the size of the problem. Much was being done by voluntary and municipal hospitals and other agencies. It was not possible to establish a national service at present, but he would consider what could be done to extend existing work.

LANARKSHIRE HOSPITAL SCHEME

A scheme for a great general hospital and maternity and infectious-diseases hospitals in Lanarkshire has been projected by the county council together with the town councils of Rutherglen, Coatbridge and Hamilton in collaboration with the commissioner for special areas in Scotland. The original cost was estimated at about £900,000, but the figure has now been raised to £1,166,000. The commissioner was asked if he would provide an additional grant in view of the increased cost, but he suggested a cheaper modified scheme—namely, to increase his percentage grant, while retaining the maximum of £500,000, conditional on work being begun before March 31, 1940. The joint committee of the councils concerned now think that the project may have to be abandoned or at least greatly modified.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM DOCTOR DON

I

As usual I have taken too much on, and the prospect of Grains and Scruples, the B.M.A. meeting in Aberdeen, and several lectures, all to be completed before I sail to America on Aug. 19, fills me with dismay. The kind of thing that will slip easily off your pen, said Mrs. Kettle, but things which do that turn me hot and cold when I read them in print. The older I get the more I refuse, and yet the more life seems shaped by obligations and forces from without rather than by some inner plan or persistent purpose. And so I keep grumbling, and thinking, if only I can finish this and get out of that, I shall really be able to do my own work and have leisure to be happy. Life at present has the negative virtue of not providing enough leisure to be unhappy, though I suppose according to Schopenhauer one can expect no more. A few years ago a lady wrote a book that solved all these difficulties. Just keep a diary of every one of your activities, note which left you happy and which didn't, and within a short time you would learn where your happiness lay. I have toyed with the idea and it won't work. A superficial study of the autonomic nervous system shows that the same stimulus at different times produces entirely different results, and the intact organism is a great deal more unpredictable than the autonomic nervous system. In most of us the emotions are rather like the weather, though some enjoy a more equable climate than others. We know that with a south-east wind it will rain long and with a north-east it will be cold, but most days we cannot foretell when happiness will break in like sunshine. I am so busy that I never lack something to do, and am always looking forward to time for relaxation and hobbies. One is haunted by the fear that the day may be gone and the zest for the game departed before one gets out. The beauty of transient things takes on a poignant quality, but at any rate one is spared preoccupation with the problem of leisure.

* * *

What fun it would be to have a fugue—a Ramble in Aphasia as O. Henry somewhat inaccurately entitled his short story on this theme. Then I should know what life would have been like if I had gone into the insurance business at 17, though really I should prefer something even simpler than that, say a tobacconist's shop. One's wants seem small—good food, a comfortable bed, and time to sit in the sunshine or to feel the hill wind on one's face—and why should one work so hard to satisfy them? Would there have to be a Mrs. Chalice? The combination of a good landlady and a bedfellow is undoubtedly appealing, but I think the really successful ramblers in aphasia (whether it is called the Kingdom of Heaven or the lotus island) just have to leave the wife and kids at home. It's love that makes the

world go round, and if you want life to stand still you must cut out the sex interest.

"... the end for which they work,
Beasts coupling with the groaning beasts they capture,
And all this dirt for just three minutes' rapture."

I interrupt my writing to go across to the children's school prize-giving. Fortunately it was just not raining after violent storms earlier in the day. One very small boy told his father he thought they'd had enough thunder and lightning and would he tell it to stop. Father's failure marks the beginning of his descent from Olympus, and after his brief enthronement he can only look forward to a future of paying bills and being expected to cut up well. What a pity such exquisite children must one day grow up to look like us—homely, battered, raddled, edentulous, kyphotic parents but again I am expecting life to stand still like Keats's Grecian urn.

* * *

A less pleasant reminder of our mortality was a funeral service in a college chapel. In such surroundings the Church of England funeral service attains its full majesty, and he must be hard indeed who can hear without emotion the choir chanting "As soon as thou scatterest them they are even as a sleep; and fade away suddenly like grass. . . ." Funeral services in hospital chapels are often sadly unimpressive. The congregation is whipped up from somewhat unwilling students and preclinical teachers and a forced-labour battalion of nurses. The obsequies are mechanically chanted by a chaplain who did not know the deceased and has taken no pains to find out anything about him. So disgusted was I by my early experience of these services that I decided to add a codicil to my will forbidding one over me. My first experience of a more fitting ceremony was Ryle's address at Rowlands's funeral, and I have since become more and more firmly convinced that such a tribute to a colleague by a man who knew and loved him is the best arrangement for these melancholy occasions. Others of the same quality were Nelson on Melly, and all too soon afterwards, Roberts on Nelson—poor Nelson gone like a soldier on Armistice morning before we knew what sulphonamide could do. South of Durham there is no church more beautiful than St. Bartholomew the Great, and Roberts's address was that of a master over his favourite pupil. All these were men who died young or in full career, but most of us feel that sudden death in the late fifties is much less tragic than survival beyond our powers. Cerebral atheroma is a long-drawn out tragedy for the audience with no relief before the curtain falls. Only a little less pitiable are the withered females, relics of departed husbands or parents, who clutter the hotels of this and other countries, and form one of those elements of forgotten England which the tourist rediscovers. In ancient days these old bodies would have drifted to the edge of the herd and been picked off by marauding beasts. The fast car inflicts its toll on them today, but the majority linger on, till one day the dinner-gong calls to them in vain and a few days later a casual group of relations arrives to strike the right note between decorum and festivity at lunch after the funeral.

Talking of forgotten England, a phenomenon which has been insufficiently discussed is the disappearance of the dummy. When I went to school as a boy, every doorstep had its baby with a dummy, but now they have become as infrequent as the Norfolk jacket and the beard. Like many of the innovations of the pædiatrician and the trained children's nurse—whom I blame almost entirely for the decline of breast-feeding—this move has not been altogether for good. The hygienic gain does not weigh with me, as babies have an ineradicable tendency to pick up and eat dirt from the floor. In the days of the dummy an epoch came, at about 3 or 4 years, when the dummy was banned and the child put away babyish habits of sucking. If babies don't suck a dummy they suck their fingers, and you can't take away fingers; so now children go on sucking their fingers and cherishing their sleep fetishes till well into school life. If I may voice another grievance against the march of modern hygiene it concerns the disappearance of the chamber pot. I am not referring to nocturnal searches round strange houses for the bathroom—or to that memorable evening in the residents' quarters when we had a wonderful if expensive curling match with these articles. Nor shall I discuss that difficult transitional period when it was there, but not used, a mere insurance against some sudden emetic or diuretic catastrophe. Merely as a gardener I lament the disappearance of that invaluable commodity, Household Slops, and all our modern fertilisers and auxins cannot quite replace the loss. The Esquimaux store all their urine in a tub and wash their long tresses in it before their dancing. The chemists extract from it the basic principles of virility and femininity, and I cannot but feel that here lies the clue to the difference between the wonderful blooms of the Chelsea show and the starvelings of my garden.

* * *

John Mellanby's death is a major disaster for the Oxford medical school. Only a few weeks ago I was sitting next to him at dinner and he was being, as usual, the advocatus diaboli, suggesting that all human conduct was actuated by selfish motives, and that such ideas as service to humanity were utter cant. I agreed with him, arguing that my own activities were designed merely to release personal inner tensions and to forget for a time that I was a miserable human being, conceived in sin and born to trouble as the sparks fly upward. But we were in the minority and the angels won, as well they might, when John was a living contradiction of his own statements. His zest in life was great and he communicated to us his joy in Herodotus and Cellini. But it was his unselfishness and common sense which were so valuable, when the Oxford medical school had the difficult task of administering a large sum of money with its hands tied. Nor are these universal virtues. I am constantly surprised by the amount of jealousy in academic (not merely medical) circles and the extent to which professors will misuse their privileges and block the careers of their subordinates. Mr. A. G. H. Dent says that large-scale organisations suffer from numerous diseases—"committee-itis, departmental astigmatism, Napoleon complex, passing the buck and so forth"—and one can certainly find all those in a university. The Germanic conception of the professorial status and of the outstanding importance of one's own department, subject and researches, fills me with mingled wrath and amusement. The wife of a minor member of the species grumbled for a time at her treatment in a nursing-home, "but as soon as they found out who I was, things were quite all right." Why the inflated self-esteem of *die Gelehrten?* A man needs to be very great before he can afford to be without humility and the milk of human kindness. In our youth, said one of my cynical teachers, we choose science, and later on we wish we had chosen money. Most

academic workers have no escape road and in the effort to make the most of what they have got, they sometimes lose their poise and exaggerate. John Mellanby, on the other hand, was the happy warrior, who had done great things and was perfectly happy in his position and achievements.

* * *

When I analyse my own position, I often feel it a false one. My scientific leanings are those of a student, with an interest in the synthesis and application of knowledge rather than discovery. My opinion of clinical science is diffident and I feel that in its strict meaning of bedside science there is not much to be done 2300 years after Hippocrates except applied psychology and therapeutics (though that is quite a lot). It is, however, a necessary evil, for there must always be a province where the patient and the fundamental sciences come into contact. Like other unhappy lands, Palestine and the Low Countries, whose fate it is to lie between great powers, clinical science has been the scene of much warfare. I confess to having written editorials on both sides, but it has begun to get rather tiresome and I am all in favour of declaring it a neutral zone. What then is my armour of righteousness? I suppose the facts that I am here by invitation and feel others must share the blame; that I have "chanced my arm" often enough in the past to show I am prepared to do so in the future; that I have earned quite a respectable living outside the academic fold and could venture out again. And so I thank God for the station in life to which he has been pleased to call me, until the fate of these wretched refugees pricks my conscience. When I read their curricula vitæ I feel, There but for the grace of God go I. How many of us would survive the same scrutiny? The leaves of yesterday clutter up the bound volumes of the *Lancet* and the *Quarterly Journal of Experimental Physiology*, and how much has it all rotted down to? In the groves of science, kissing goes by favour, and a good manner and an elegant trick of presentation will advance a man far along the road. A self-made Lancashire man told me that the secret of success in business is to get into the "right click," and many of us can count ourselves lucky to have got fairly early into the right clique. We are apparently torn between the desires of having the refugees here to bind up our wounds in time of war and of preventing them from eating our bread in time of peace. Shall I give my solution? One day, I hope not very far off, we shall have to provide proper, conservative dental benefit for an insurance panel that will include dependants as well as workers—i.e., the bulk of our population. We shall then have nothing like enough dentists to go round. If refugees with medical qualifications were encouraged to do the practical training necessary to qualify in dentistry, they might fill this gap and act as a medical reserve for times of war.

* * *

Now comes a circular announcing that the Ministry of Health views with disapproval visits to Canada and U.S.A. before the end of September, even though they are for the purpose of attending scientific congresses. Well, it would have been a great rush as we had arranged it, a mere tumbling out of railway trains and planes and lecturing (in the specially air-conditioned theatre) and moving on again. So perhaps another year we shall have more time.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By Medicus, M.P.

It is one of the duties of a Member of Parliament to attend at their Lordships' House to take part in the ceremony of the giving of the royal assent to acts of Parliament. When the representatives of the House of Commons march in procession through the lobbies to the House of Lords they do so after a summons by a House of Lords official known as Black Rod. And when Black Rod comes to the House of Commons to bring his summons the door to the chamber is banged in his face, and he knocks ceremoniously three times—with his rod—to demand entry which is at once accorded. The procession for the House of Lords goes straight from the House of Commons, the mace preceding it and the Speaker following it. Then the faithful commons, or such of them as have gone there, stand in a congested crowd behind the bar of the House of Lords to hear the royal assent given. Usually it is given by a commission of three peers seated in their robes with hats on their heads and after the document signed by the King "with his own hand" has been read, which gives them authority to act, a list of bills passed by both houses is read and in Norman French the clerk bows and declares "Le Roy le veult."

On Friday last there was a long list of such bills which by the ceremony became acts of Parliament—the members of the commission representing the King, members of the House of Lords and members of the House of Commons present constitute "Parliament" as an entity. Among them was the Finance Act which rivets taxation on our necks for a year, various bills promoted by local authorities for sewerage, bridges and similar objects, a bill to prevent damage by rabbits, a bill to develop agriculture and a bill described as "Prevention of Violence (Temporary Provisions)," otherwise the I.R.A. Bill. This bill passed its final stages in both House of Lords and House of Commons on Friday, and, as the Speaker said, it was a good thing to let the world know that in an emergency Parliament can act with great speed.

* * *

It is perhaps also a sign of the times that the House of Lords on Thursday, of last week devoted some time and some plain speaking to the Milk No. 2 Bill whose passage through the House of Commons, not unchequered with criticism, has been already recorded. Lord Feversham, in introducing the bill, claimed credit for the government in that it provided £250,000 for milk for mothers and young children in 1938 and increased the sum this year still further. He merely mentioned that the money had not been spent and the milk not provided, but announced that "within the last few days" agreement had been reached with the Milk Marketing Board. The purpose of the scheme is to enable the local authorities to provide milk for maternity and child-welfare arrangements at 2*d*. a pint, a little more than half the ordinary retail price. The cost of milk supplied at less than 2*d*. a pint will fall on the local authorities funds, but the Exchequer grant will be sufficient to bring the Milk Marketing Board's returns up to 1*s*. 2*d*. a gallon in the year. The distributive margin will be not more than 8*d*. a

gallon and the Minister hoped that distributors would coöperate, but he did not mention that the Government had been unable to arrange for this coöperation from July, 1938, to July, 1939.

Lord Onslow raised the question of clean and safe milk, instancing the outbreak of typhoid at Poole and referring to the refusal of the Government to allow Poole and also Glasgow to promote local legislation for pasteurisation of milk. Lord Snell spoke of his "almost continuous desire to avoid milk because of the dangers which were associated at least at one time" with its consumption. And it is worth noting that Lord Snell began his working life as a small boy on a farm.

Lord Luke drew attention to the vital question of milk for hospitals and said that every hospital bed needed $1\frac{3}{8}$ pints of milk a day, a total of 7 million gallons per annum out of the 1100 million gallons consumed in the whole country. Lord Luke asked for milk for hospitals at a lower price. Milk, he said, now accounts for a quarter of the total cost of hospital provisions and they could use more if the milk were cheaper. The cheap milk for making butter and cheese was mentioned—it may be as cheap as 6*d*. and 7*d*. a gallon—but not the cheap milk for umbrella handles, luxury chocolates and other industrial purposes. The Earl of Feversham said that the fact that hospitals are doing beneficent work is surely not a reason why producers of milk should give them preferential treatment to the extent of selling their milk at an unremunerative level. His lordship might have been asked if a greater consumption of liquid milk in hospitals at a cheap rate, subsidised if necessary like the milk-in-schools scheme, would not be saner economics than selling it at starvation prices for industrial purposes or, as sometimes happens when an ice-cream factory finds itself with a surplus, using it to flush the drains.

So neither Lord Luke about cheap milk nor Lord Onslow about safe milk got any more satisfaction in the House of Lords than did anyone in the House of Commons.

* * *

The debate on old-age pensions in the House of Commons was a debate on a very live political issue. The increase in the average age of the population is making itself felt electorally and many thousands of old-age pensioners from all over the country have recently presented petitions to Parliament asking for an increase of the present 10*s*. a week to 20*s*. The Labour Party proposal for contributory old-age pensions of 20*s*. for a single man and 35*s*. for man and wife has attracted the attention of the country and the censure of Government supporters, who say that in these times of financial stringency when we are spending 750 million pounds this year on armaments—only 250 million of which is paid for out of revenue—the Government cannot afford the 29 millions which increased old-age pensions would require during the first ten years. But the contrast between the scale of armaments expenditure and that of old-age pensions has upset the psychological balance of contentment with things as they are, and many Government supporters as well as members of the Opposition are strongly in favour of a change. The fact that present old-age pensions involve in many cases an appeal for additional help from public assistance has brought the local authorities into the controversy. On the day of the debate the Minister of Health received a joint deputation from the Association of Municipal Corporations, the County Councils Association and the London County Council representing the views of every local authority in the country and pressing the Government to take action. Mr. Arthur Greenwood for the Opposition and the Prime Minister for the Government were the chief adversaries but neither went to the heart of the matter which lies, as was suggested in the debate, in the creation of a ministry of pensions and insurance which would coördinate under a single roof all pensions and insurance schemes. Old-age pensions are worked at an expense-ratio of about 6 per cent., national health insurance costs 24 per cent., and industrial insurance 32 per cent.

Immense sums are paid out each week for various kinds of insurance. Annual premiums on burial policies total £65 millions, of which at least £20 millions could be saved by Government administration. And there are great capital assets which the Government could take over also. A real and comprehensive insurance and pensions plan is feasible if the assets available are used. The obstacle is not money even at the present time it is wasteful administration of existing services.

FROM THE PRESS GALLERY

Marketing of Milk Products

IN the House of Lords on July 26, when the Milk Products Marketing Scheme, 1939, was approved, the Earl of FEVERSHAM said that it sought powers for the regulation of the marketing of butter, cheese, condensed milk, condensed skimmed milk, dried milk, dried skimmed milk, cream and sterilised cream. It would set up a board elected by producers of the various milk products, and the main objective would be to secure stability in the market for milk products.

Earl HOWE called attention to a report that a company which made ice-cream had applied to the Brighton town council for permission to pour 1500 gallons of milk down the drain. He was sure that many people would give a good deal to obtain some of this milk.—The Earl of FEVERSHAM said he understood that the milk in question was skimmed and therefore unfit for human consumption. It would receive the approval of the medical officer of health under the cheap-milk scheme. He agreed that every effort should be made to use such milk, but unless it was to be dried or condensed it would not come within the provisions of this marketing scheme, which covered only processed milks, or butter and cheese.—Lord ADDISON cordially agreed with the scheme, but hoped it would not be directed on lines limiting the supply. The incident to which Lord Howe had called attention was only one of many. If there had been a scheme for the proper utilisation of milk products this scandalous waste would never have occurred.

[In the House of Commons on July 27 Mr. THORNE asked the Minister of Agriculture if he would take action to prevent the Hove Dairy Company from pouring into the Brighton outfall sewers 1500 gallons per day of milk which was the residue from the manufacture of ice-cream; and if he was aware that the borough engineer stated at the council meeting that this milk was perfectly good.—Sir WALTER WOMERSLEY replied: I understand that an application was made to the Brighton Sewers Board by the dairy company in question for permission to discharge separated milk into the outfall sewer up to a maximum of the quantity stated in the question, in order to cover the contingency of the company not being able to handle or dispose of such supplies in the ordinary course of trade. My information is that at no time have the company poured 1500 gallons of separated milk into the sewer, that no milk is at present being disposed of in this way, and that in the past only comparatively small quantities have been so dealt with. The Milk Marketing Board is in touch with the company with a view to the avoidance of any waste of separated milk in future.]

Lord ELTISLEY said that representations had repeatedly been made to the Ministry of Agriculture as to the need for standardising cream. He recently came across a case where cream was supplied containing 23 per cent. butter-fat. Suddenly, without any intimation to the public, it was altered to 16 or 17 per cent, and the purchasers still believed they were getting the same quality of cream. He suggested that they might have a standardised 50 per cent.

cream in ice-cream products and probably also a 23 per cent. butter-fat cream.

In the House of Lords on July 28 the House to House Collections Act received the royal assent.

QUESTION TIME

JULY 27–AUG. 2

Midwives and Analgesics

Sir EDMUND FINDLAY asked the Minister of Health what were the analgesic preparations used by state-registered midwives and/or certificated nurses on their own responsibility in cases of childbirth.—Dr. SUMMERSKILL asked whether his attention had been drawn to the resolution passed by the British Medical Association deprecating the use of an analgesic by midwives; and whether, with a view to countering any ill effects of this resolution, he would make a statement to reassure the public as to the complete safety of the administration of gas by midwives.—Mr. ELLIOT replied: I will take the opportunity of stating the position with regard to the administration of analgesics by certified midwives. In January, 1936, following a careful investigation, the Royal College of Obstetricians and Gynæcologists reported that the administration of nitrous oxide and air by Dr. Minnitt's apparatus was safe for use by midwives under specified conditions. The Central Midwives Board in October, 1936, accordingly passed a resolution recognising as treatment within the province of a midwife the administration of gas and air by Minnitt's or similar apparatus for the purpose of producing analgesia during labour, subject to the following conditions, which are those specified by the college: (1) that she has, either before or after enrolment, received at an institution approved by the board for the purpose special instruction in the essentials of obstetric analgesia, and has satisfied the institution that she is thoroughly proficient in the use of the apparatus; (2) that the patient has within one month before her confinement been examined by a registered medical practitioner who has handed to the midwife a certificate in writing that the patient is in a fit condition for gas-and-air administration; and (3) that one other person, being a state-certified midwife, or a state-registered nurse, or a senior medical student, or a pupil-midwife, is present at the time of administration in addition to the midwife in charge of the case. The ruling of the Central Midwives Board is the ruling of the statutory authority responsible and it will be seen that it allows the administration of analgesics by midwives in circumstances regarded as safe by the Royal College of Obstetricians and Gynæcologists. Under such circumstances I think the public may be completely reassured as to the safety of the administration of gas by midwives.

Miss RATHBONE: Will the right hon. gentleman undertake that this merciful practice of allowing midwives to administer an analgesic will not be interfered with by the selfish attitude of a certain portion of the medical profession who expressed their views the other day?—Mr. ELLIOT: It cannot be interfered with; that is the ruling of the Central Midwives Board which is the statutory authority.

Sir EDMUND FINDLAY: Will any action lie against a midwife without this authority who administers an analgesic, notwithstanding the fact that a doctor might be some 20 miles away?—Mr. ELLIOT: A certified midwife can administer an analgesic under the conditions which I have stated, and which I think can be complied with by midwives even in distant parts of the country.—Viscountess ASTOR: Even to ignoring the presence of a doctor? Sometimes they cannot get another person.—Mr. ELLIOT: It is very desirable that some other person beside the midwife should be there.

Dr. SUMMERSKILL asked whether the Minister would state the number of local authorities providing a municipal midwifery service who were training midwives in the administration of analgesics; and how many were refraining from using their powers.—Mr. ELLIOT replied: According to the returns made to me by local supervising authorities, up to Dec. 31, 1938, 29 of the 188 authorities concerned had made arrangements approved by the Central Midwives Board for the instruction of midwives in the administration of analgesics.

Old-age Pensioners Receiving Relief

Mr. TINKER asked the Minister of Health the number of persons in receipt of old-age pensions who were also receiving poor-law relief in January, 1939; whether this showed an increase over the figures of January, 1938; and, if so, what was the percentage increase.—Mr. ELLIOT replied: On Jan. 1, 1939, there were 250,291 old-age pensioners in England and Wales who were in receipt of poor relief, representing an increase of 8·5 per cent. on the corresponding number on Jan. 1, 1938. The proportion of old-age pensioners in receipt of poor relief to the total number of old-age pensioners has accordingly also risen slightly, from 10·04 on Jan. 1, 1938, to 10·5 on Jan. 1, 1939.

Nurses for Civil Defence

Mr. ROSTRON DUCKWORTH asked the Minister of Health the measure of response to his appeal for extra nurses and auxiliary nurses, respectively, who would be needed in case of war.—Mr. ELLIOT replied: By June 30 over 9000 trained nurses and assistant nurses had been enrolled, and 45,000 women had applied for training as nursing auxiliaries. In addition about 24,000 immobile nursing members of voluntary aid detachments have been released from their service obligations with a view to their becoming available as nursing auxiliaries, and enrolment of these is now proceeding.

Captain ELLISTON asked whether he, the Minister, could make an announcement as to the pay and conditions for trained nurses and assistant nurses of the Civil Nursing Reserve in war-time.—Mr. ELLIOT replied: Yes, Sir. Trained nurses supplied by the Civil Nursing Reserve will in war-time receive for whole-time service a flat rate of £90 per annum, plus board and lodging. The corresponding rate for assistant nurses will be £55. Trained nurses in charge of wards will have an additional allowance of £20 per annum. In certain cases an assistant nurse may receive up to £65 per annum. To these rates will be added free laundry or 3*s*. 6*d*. per week in lieu. These rates have been recommended to me by the central emergency committee for the nursing profession, which includes representatives of the principal organisations concerned with nursing, including the General Nursing Council, the Royal College of Nursing, the voluntary hospitals and the local authorities. Where trained nurses or assistant nurses are not provided with board and lodging an additional sum of one guinea per week will be payable. As already announced, the rate for nursing auxiliaries will be £2 a week non-resident for whole-time service.

Register of University Teachers

Mr. SILKIN asked the Minister of Labour whether the register of university teachers referred to in the National Service Handbook had been compiled; and what forms of service they would be called upon to undertake.—Mr. ERNEST BROWN replied: Members of staffs of universities have recently been recircularised to ascertain their willingness to be enrolled on the central register of persons with special qualifications and the bulk of the replies have now been received. The object of the register is to provide a ready means of selecting qualified persons for vacancies in war-time as and when they may arise; it is not, in general, possible to specify these vacancies in advance, nor is any guarantee given that a post will be offered.—Asked what kind of employment they would be called on to undertake, Mr. Brown said he could not answer that in reply to a supplementary question. There was a whole range of scientific and special forms of employment available.

Professional Women and National Service

Mr. SILKIN asked the Lord Privy Seal whether he was aware that there were many professional women anxious to render national service but were incapable of taking up physically strenuous work; and whether he would make known the forms of national service in which the training and experience of such women could be utilised.—Sir JOHN ANDERSON replied: Women with special professional, scientific or technical qualifications who would be prepared to undertake work of a specialist

character in the event of emergency should communicate with the Ministry of Labour, which is maintaining a central register of the names of persons so qualified who would be available in time of war to meet the needs of Government departments and industrial concerns for additional technical and professional staff.

London University Students and Evacuation

Mr. SILKIN asked the parliamentary secretary to the Board of Education whether he was aware that students of Queen Mary College, London University, were to be evacuated to Cambridge in the event of a national emergency; and whether, as they would be required to pay £2 a week, he would say what steps he proposed to take in the case of those students who had not the means to pay this sum.—Mr. KENNETH LINDSAY replied: The evacuation arrangements affecting London University students are being made by the appropriate university authorities, who will be responsible for considering any necessary financial measures.

Diphtheria Inoculation in Guernsey

Mr. GROVES asked the Home Secretary how many children who had been inoculated against diphtheria in Guernsey, over eight weeks, had contracted diphtheria since the immunisation scheme was started; and how many inoculated children, less than eight weeks after the inoculation, had contracted diphtheria since immunisation started.—Sir SAMUEL HOARE replied: I am informed that the numbers are 23 and 17 respectively.

X-ray Apparatus

Mr. HOPKIN asked the Minister of Health if he was aware that a portion of a large number of X-ray units for civil hospitals in time of emergency now being constructed for or on behalf of the Ministry of Health was being fitted with X-ray tubes of British manufacture and a greater portion with foreign X-ray tubes, although British tubes were available and efficient; and would he recommend that only British X-ray tubes be fitted in all such units.—Mr. ELLIOT replied: The majority of the tubes for mobile X-ray apparatus ordered for the emergency hospitals are to be British and the remainder American. The orders were placed with the British X-ray Engineers' Association and allocated by them to all the firms in the industry in this country. In the present state of the industry it would not be practicable to insist upon the exclusive use of British tubes.

Unemployed Men and Keep-fit Classes

Mr. THOMAS WILLIAMS asked the Minister of Health if he was aware that certain keep-fit classes for unemployed men were unsatisfactory because members of the class become hungrier than usual as the result of exercise and they could not afford any extra food; and what steps were being taken to remove this disability.—Mr. ELLIOT replied: I have no information about the matters referred to, but they do not appear to fall within the province of my department.

Drug Traffic in China

Sir JOHN HASLAM asked the Prime Minister whether the Japanese government had yet been approached with regard to their failure to control opium dens in the Japanese-occupied area surrounding Shanghai, and the distribution of heroin and other drugs in the various parts of China in their occupation.—Mr. BUTLER, under-secretary for foreign affairs, replied: The reply is in the negative, but His Majesty's Government have under immediate consideration possible representations to the Japanese government on the drug situation in the occupied areas of China.

Milk for Expectant and Nursing Mothers and Children

Dr. HADEN GUEST asked the Minister of Agriculture when he anticipated that the plan for providing cheap milk for expectant and nursing mothers and children under five years of age, as provided under the Milk Amendment Act of 1938 and under the Milk Bill of 1939 would come into operation.—Sir REGINALD DORMAN-SMITH replied: I am happy to say that a scheme for the provision of milk to local authorities in England and Wales at reduced prices for consumption by expectant and nursing mothers and children under five years of age was submitted by the Milk Marketing Board and approved by me on July 26. The scheme comes into force as from today and I hope that it will be possible to lay it before Parliament within the next day or two. My right hon. friend the Minister of Health will issue at the same time a circular letter and an explanatory memorandum to local authorities, with whom the initiative will then rest. I cannot at present say how soon it may be possible to bring the arrangements into operation in any given district.

Disability Pensioners

Mr. ELLIS SMITH asked the Minister of Pensions how many men were in receipt of disability pensions for injuries received during the great war; and the number that were pensioned at 100, 80, 60, 50, 40, and 20 per cent. respectively.—Sir WALTER WOMERSLEY replied: The number of officers and men in receipt of pension for disablement caused by wounds and injuries, as distinct from diseases, on March 31, 1939, was approximately 227,900. The records of my department do not enable me to give separate figures in respect of wound and injury cases for the various rates, but the total numbers of all classes of disability cases pensioned at the rates specified were as follows:—

100 per cent. ..	26,703	50 per cent. ..	50,911
80 ,, ..	14,010	40 ,, ..	50,253
60 ,, ..	33,088	20 ,, ..	112,600

Mr. ELLIS SMITH asked what number of pensioners had died during 1938; how the figures compared with those of the civil population; and how many of the widows were in receipt of a pension under the royal warrant.—Sir WALTER WOMERSLEY replied: If, as I presume, the hon. member has disability pensioners in mind, the reply to the first part of his question is the number of deaths from all causes of this class of pensioner of non-commissioned rank, in the financial year ended March 31 last, was 7480. This represents a death-rate of 18·9 per 1000 pensioners. The death-rate for the corresponding age-group in England and Wales was approximately 12·9 per 1000. The records of my department do not enable me to say how many widows of the men who died during the period concerned are now in receipt of pension.

Blood-transfusion Volunteers

Mr. VIANT asked the Postmaster-General if he was aware that members of his department offering themselves as blood-transfusion volunteers were to bear the cost of substitution if called for service, and no sick-pay was to be allowed for sickness arising out of an operation; and whether he would, in the interest of national service, reconsider these conditions.—Major TRYON replied: I assume that the hon. member is referring to the emergency scheme for blood-transfusion volunteers. So far as the clerical staff is concerned there is no objection whatever to their volunteering and no difficulty would arise about their being released for actual blood-transfusions. The remainder of the Post Office staff are for the most part engaged on the maintenance of national services and their release for actual transfusions would necessarily be dependent on the exigencies of the service. The preliminary blood-tests can usually be undergone outside official hours of duty and no payment for substitution would be required in the case of volunteers released for actual blood-transfusions in time of national emergency. I have considered the position as regards sick-pay. In future this will be allowed, subject to the ordinary rules, in the event of sickness arising out of blood-transfusion.

Voluntary Hospitals and Civil Defence

Sir IRVING ALBERY asked the Minister of Health what complaints he had received from the voluntary hospitals concerning the proposed Government contribution in case of war casualties; and what action he proposed to take in this matter.—Miss HORSBRUGH replied: The matter is now under negotiation but the Government have accepted full responsibility for the cost of treatment of war casualties in voluntary hospitals. The Government propose to make payments on account, subject to adjustment at a later date. The precise basis of the payments and points arising out of the proposals are under discussion with the British Hospitals Association.

LETTERS TO THE EDITOR

MEMORIAL TO SIR ROBERT BOLAM

SIR,—For a considerable time before his death many friends and colleagues of Sir Robert Bolam in the University of Durham and in the hospitals associated with King's College had been considering the desirability of making a presentation to him in the form of a portrait. There is now a widespread feeling that such a project should be proceeded with as a memorial to him.

As is well known, Sir Robert in addition to his recent activities with the new buildings of the medical school had a very long association with the former College of Medicine and with the Royal Victoria Infirmary. He served both of these institutions in various capacities. In the College of Medicine he was in turn lecturer on physiology and pathology, joint lecturer on physiological physics and chemistry, professor of medical jurisprudence, sub-curator of the museum; while in the Infirmary he was assistant physician and pathologist, later becoming the first honorary physician in charge of the skin department and held this post until his retirement from the Infirmary staff in 1931, when he was appointed honorary consulting physician to the skin department. The accompanying lectureship in dermatology in the College of Medicine he held from 1914–37. He also served with distinction as the University of Durham representative on the General Medical Council and was well known for his activities on other bodies, notably the British Medical Association, of which he was for some time chairman of council. In recent years he devoted much of his time to the administration of the College of Medicine and to the general work of the university, acting as registrar to the college and later as president and chairman of council; he was also in 1936–37 vice-chancellor of the university.

Since the reconstitution of the university Sir Robert's main energies were devoted to the erection of the new buildings for the medical school and as chairman of the building board he was able to see the completion of that task. It seems fitting that as the last president of the College of Medicine and as one who devoted so many years to the interests of medical education his name should be perpetuated by a suitable memorial. It is proposed therefore to raise a fund, to which subscriptions are invited, to be devoted to the following purposes:—

(1) A portrait in oils.

(2) A memorial tablet to be placed in a suitable position in the medical school.

(3) To augment an existing fund the interest of which is to be applied as a prize in dermatology.

We are, Sir, yours faithfully,

LONDONDERRY, J. F. DUFF, EUSTACE PERCY, ARTHUR M. SUTHERLAND, JOSEPH REED, RALPH MORTIMER, R. J. WILLAN, F. C. PYBUS, R. B. GREEN (Dean),

The Medical School, King's College, Newcastle-upon-Tyne, July 26.

A NATIONAL COUNCIL FOR MENTAL HEALTH

SIR,—In your summary last week (p. 274) of the report of the Feversham committee, referring to the proposed new National Council for Mental Health, you state: "it appears that the Mental After-Care Association has not yet seen its way to coöperate." It is true that this association has resisted the very strong pressure put upon it to become part of a limited liability company by means of what the report calls: "a complete merger, each contributing society losing its identity in the corporate whole." It is, however, misleading and inaccurate to describe this difference on principle as a refusal to coöperate.

The Mental After-Care Association, which is by a very long way the senior of the organisations concerned, has made unceasing attempt at friendly coöperation with all of them in every possible way and, in particular, by following the principle of "mutual assistance without interference" which is a golden rule for fellow workers in the field of mental health. In my dealings with the Feversham committee on behalf of the association I have every reason to believe that my endeavour to maintain a friendly and coöperative attitude, without abandoning principle, was not entirely unsuccessful. The general policy of the association was fully expounded at its annual meeting last spring, when, after an admirably impartial review of the whole situation, our chief speaker Lord Blanesburgh summarised our attitude in three words: "Coöperation; not amalgamation."

In these circumstances I am sure that you, Sir, will appreciate my desire to remove any misapprehension which the phrase in your summary may have caused.—I am, Sir, yours faithfully,

HENRY YELLOWLEES,
Chairman of Council, Mental After-Care Association.

Grand Buildings, Trafalgar Square, W.C.2, July 28.

RESTORATION AFTER EXCISION OF MAXILLA

SIR,—In your issue of May 27 Mr. Greer Walker writes on the application of prosthetic apparatus after excision of the maxilla. As regards function as well as time he distinguishes between appliances inserted immediately and those constructed and adapted much later, when healing is complete. I suggest that this distinction is not only unnecessary but will lead in many cases to difficulties of the kind he describes. In a communication written with the late Mr. C. H. Bubb (*Brit. med. J.* 1916, **1**, 268) it was shown that separation of the nasal from the oral cavity, restoration of the masticating surface, and restoration of facial contour, could and should be secured at one and the same time, provided that the apparatus was inserted soon after operation—preferably after an interval not longer than three to four weeks. This question of functional and cosmetic restoration after destructive operations on the jaws was further elaborated by me in your own columns (*Lancet*, 1920, **2**, 845). A point hitherto not raised is the possibility in selected cases of hinging the mucoperiosteum on the oral surface of the hard palate and throwing it upwards and outwards to line the raw surface of cheek above the level of the buccal sulcus.—I am, Sir, yours faithfully,

Wimpole Street, W.1, Aug. 1. PERCIVAL P. COLE.

BITOT'S SPOTS

SIR,—Dr. Nicholls in your issue of June 24 suggests that there may be two forms of xerosis of the bulbar conjunctiva, an acute and a chronic form, and that only in the former do Bitot's spots appear to be covered with a white foam. During a recent investigation into vitamin-A reserves in African natives it was my good fortune to see several cases where natives who were normally accustomed to a generous and well-balanced diet had been forced to subsist on a diet completely lacking in vitamin A.

These consisted of native police and servants of prospectors and surveyors who had been in the bush for some considerable time, living almost exclusively upon maize-meal and beans. Other cases occurred among a group of school-children who were boarders at a school where the diet provided was essentially similar. Bitot's spots appeared in about 25 per cent. of the cases of night-blindness that occurred, usually between 5 and 9 weeks after the commencement of the deficient diet. The foaming type was almost general and was accompanied by excessive lacrimation. Contrary to Dr. Nicholls's experiences with what he suggests is the chronic form, these lesions healed up a few days after treatment with large doses of vitamin A had started. Further, night-blindness invariably preceded the development of the spots.

This evidence appears to support strongly Dr. Nicholls's suggestion as outlined above.

I am, Sir, yours faithfully,

ALAN MCKENZIE.

The Government Hospital, Morogoro, July 26.

BRUIT DE FOUET?

SIR,—We have come across an unusual physical sign which we have not seen recorded in the literature. The patient concerned was a Zulu male, suffering from pulmonary tuberculosis. He developed a severe pain in the right side of his chest and abdomen. When he was examined a loud leathery pleural rub was evident. We diagnosed a fibrinous pleurisy. Diaphragmatic extension would account for the abdominal pain. Five days later when the patient was feeling much better, the pleural rub had gone and normal breath sounds were audible. When the patient gave a cough a loud crack was heard, as if someone had flicked the end of the stethoscope with a finger. The sound recurred every time the patient coughed. We think the explanation was as follows. The cough suddenly tore many sticky fibrinous adhesions, which remained glued together during normal respiration. We have not heard this sound before. We would like to know if it has been recorded, and if our explanation is correct.

We are, Sir, yours faithfully,

C. A. H. WATTS,
B. M. WATTS.

Bishop Roach Memorial Hospital, P.O. Nkandhla, Zululand, S.A., July 21.

PROFESSOR BLEULER

SIR,—Your annotation last week on the death of Professor Bleuler prompts me to record a little story of the great psychiatrist. When nearly 80, after he had retired from the directorship of the Burghölzli Mental Hospital, he took up motoring. His efforts as a chauffeur were at first distinguished more by enthusiasm than skill. One day, as he was pursuing an erratic course down the main street of Zürich, a cabby shouted at him, "The place for you is the Burghölzli." To this, Bleuler shouted back, "my friend! I have only just left it."

I am, Sir, yours faithfully,

Aug. 1. L. DRIVER.

MEDICAL NEWS

Royal College of Physicians of London

At a meeting of the college held on July 27, with Sir Robert Hutchison, the president, in the chair, the following fellows were elected officers for the ensuing year :—

Censors: Sir Maurice Cassidy, Prof. W. E. Hume, Dr. Anthony Feiling, and Prof. F. S. Langmead. Treasurer: Sir Charles Wilson. Registrar: Dr. H. L. Tidy. Harveian Librarian: Dr. Arnold Chaplin. Assistant Registrar: Dr Reginald Hilton. Library Committee: Dr. Herbert Spencer, Sir Adolphe Abrahams, Dr. J. D. Rolleston, and Dr. Charles Newman. Finance Committee: Dr. A. M. H. Gray, Dr. J. P. Hedley, and Dr. H. E. A. Boldero.

The following were elected examiners :—

Chemistry: Mr. J. E. Facer and Prof. W. B. Tuck, D.Sc. Physics: Mr. J. H. Brinkworth, D.Sc., and Prof. F. L. Hopwood, D.Sc. Materia Medica and Pharmacology: Dr. E. B. Verney, F.R.S., Prof. E. J. Wayne, Dr. H. A. Dunlop, Dr. J. W. de W. Gray Thornton, and Prof. J. H. Gaddum. Physiology: Prof. B. A. McSwiney and Prof. R. J. Brocklehurst. Anatomy: Prof. R. D. Lockhart. Pathology: Dr. Geoffrey Bourne, Dr. F. J. Nattrass, Prof. J. H. Dible, and Prof. G. P. Wright. Medical Anatomy and Principles and Practice of Medicine: Prof. G. W. Watson, Dr. George Graham, Sir Charles Wilson, Prof. F. E. Tylecote, Dr. R. A. Rowlands, Dr. J. A. Drake, Dr. Arnold Stott, Dr. Geoffrey Marshall, Dr. R. A. Hickling, Dr. D. T. Davies, Dr. Kenneth Harris, and Dr. H. H. Carleton. Midwifery and Diseases peculiar to Women: Mr. Clifford White, Prof. A. Leyland Robinson, Mr. D. W. Roy, Mr. Frederick Roques, and Mr. Arthur Gray. Public Health: Part I, Dr. J. M. Hamill; Part II, Dr. James Ferguson. Tropical Medicine: Prof. Warrington Yorke, F.R.S., and Lieut.-Colonel J. S. Knox Boyd. Ophthalmic Medicine and Surgery: Dr. J. Purdon Martin. Psychological Medicine: Part I, Dr. Eric Strauss; Part II, Dr. C. P. Symonds and Dr. G. W. B. James. Laryngology and Otology: Mr. Lionel Colledge. Radiology: Prof. Sidney Russ, D.Sc., and Dr. Russell Reynolds. Anæsthetics: Dr. C. L. Hewer. Child Health: Dr. H. C. Cameron and Dr. Norman Capon. Murchison Scholarship (1940): Dr. Terence East and Dr. H. K. Goadby.

Dr. H. L. Tidy was re-elected representative of the college on the General Medical Council. Lord Horder was appointed Harveian orator for 1940 and Prof. Henry Cohen Bradshaw lecturer for 1940. The Moxon medal for researches and observations in clinical medicine was awarded to Sir Arthur Hurst; the Baly medal for physiological researches to Prof. C. H. Best, F.R.S. (Toronto); and the Weber-Parkes prize and medal to Sir Pendrill Varrier-Jones for his work on tuberculosis at the Papworth Village Settlement. The Murchison scholarship was awarded to Dr. A. J. M. Drennan (Edinburgh).

The following candidates, having satisfied the censors' board, were admitted to the membership :—

D. R. Allison, M.D. Leeds; I. M. Anderson, M.B. Glasg.; H. C. Aston, M.B. Birm.; D. A. K. Black, M.B. St. And.; C. R. B. Blackburn, M.D. Sydney; W. A. Brend, M.D. Lond.; M. E. Chinner, M.D. Adelaide; J. F. C. C. Cobley, M.B. Sydney; D. R. Davis, M.B. Camb.; R. B. Evans, M.D. Lond.; Major J. C. Gilroy, R.A.M.C., M.B. Edin.; Raymond Lewthwaite, M.D. Oxfd; B. J. Malley, M.B. Dubl.; S. F. Marwood, M.D. Lond.; W. M. Philip, M.B. Lond.; W. N. Pickles, M.D. Lond.; D. S. Scott, M.B. Camb.; Ralph Southward, M.B. Glasg.; J. F. Stokes, M.B. Camb.; Monty Toohey, M.B. Dubl.; Joseph Walter, M.B. Oxfd; H. T. H. Wilson M.B. Camb.; and Roger Wyburn-Mason, M.B. Camb.

Licences to practise were conferred upon the following 202 candidates (185 men and 17 women) who have passed the final examination of the conjoint board :—

Stephen Ackroyd, Camb. and Middlesex; G. A. S. Akeroyd, St. Bart's; T. D. Ap Ivor, Univ Coll.; R. H. Armin, Camb. and St. Thos.; J. W. Ashley, Oxfd and Middlesex; A. H. B. Atkinson, Middlesex; E. H. Bailey, Westminster; J. P. B. Ball, Westminster; Rosalind S. Barclay, Manc.; P. H. Beales Guy's; A. D. Bell, Guy's; A. J. S. Bell Tawse, Camb. and Middlesex; C. J. Bintcliffe, St. Bart's; Theodore Bliss, Charing Cross; A. D. Bone, St. Thos.; Irene M. Bower, Manc.; L. H. Boyd, Guy's; J. C. Bryce, Univ. Coll.; F. R. Buckler, Guy's; J. L. Cardwell, Camb. and St. Bart's; D. M. F. Carter, Guy's; H. A. C. Chalmers, Westminster; Prakash Chandra, West Lond. and Prince of Wales; C. K. Cole, Guy's; Frank Constable, Univ. Coll.; J. F. Cooper, Charing Cross; J. G. S. Crabbe, Birm.; R. P. Crick, King's Coll.; J. S. Crone, Guy's; G. S. Cross, St. Thos.; Barbara Cunningham, Camb. and Brist.; Harbhagwan Das, Prince of Wales; P. H. Davison, Birm.; P. F. H. Dawnay, St. Bart's; J. H. Dean, Camb. and Middlesex; V. K. Desai, Bombay; E. P. De Silva, Ceylon; M. H. L. Desmarais, St. Bart's; H. P. Dick, Camb. and Guy's; O. P. Dinnick, Middlesex; J. F. Donovan, Cardiff; A. J. Drew, Guy's; F. L. Dyson, Univ. Coll.; P. M. Elder, St. Bart's; S. D. Elek, St. George's; J. R. Espien, Lpool; E. G. Evans, St. Bart's; R. F. Evans, Univ. Coll.; Jacob Feldman, Middlesex; Betty Fox, Brist.; D. M. I. Freeman, Lpool; R. C. Fuller, St. Mary's; M. R. Gardiner, St. Thos.; J. H. P. Gauvain, St. Bart's; J. H. Gibson, Birm.; P. W. W. Gifford, Birm.; P. A. Gimson, St. Bart's; F. N. Glover, Guy's; J. A. Glover, Camb. and London; N. G. Godfrey, Sydney; G. D. Graham, Camb. and St. Bart's; R. N. Grant, Camb. and St. Bart's; J. H. Graves, St. Thos.; R. A. Gregory, Univ. Coll.; C. J. Griffin, Univ. Coll.; Aelwyn Griffiths, Cardiff; Peter Griffiths, Univ. Coll.; Sandow Grodd, West Lond.; E. R.

Gubbay, St. George's; Cyril Hamwee, Manc.; B. J. Harries, Univ. Coll.; G. F. Hay, Birm.; K. M. Hay, Camb. and St. Bart's; M. R. Hayes, St. George's; G. C. Haywood, St. Mary's; G. A. Helps, London; David Hewspear, Manc.; J. R. Holden, Middlesex; E. T. Holman, Manc. and Bath; Hannah Horton, Manc.; D. G. Howatson, Middlesex; Ruth M. Howitt, Camb. and King's Coll.; J. R. Hudson, Middlesex; F. R. Hurford, Brist.; J. P. F. Hummel, Leeds; J. C. A. Innes, London; K. G. Irving, Camb. and St. Bart's; P. W. Isaac, Camb. and St. Bart's; S. A. James, Middlesex; J. W. W. Jay, St. Thos.; G. H. P. John, Camb. and St. George's; G. M. Jones, Charing Cross; J. A. Jones, Guy's; E. J. C. Kendall, Camb. and London; D. S. Khatri, Bombay; R. R. Klein, King's Coll.; Thomas Kramer, London; W. C. Lawrence, Guy's; G. C. Lee, St. Thos.; A. A. Leigh, West Lond.; D. C. Lewin, Guy's; Katharine I. Liebert, Manc.; J. S. A. Linton, St. Bart's; L. H. Lithman, Charing Cross; J. A. Lorimer, Camb. and London; Frank Luckett, King's Coll.; H. F. Lunn, Guy's; I. D. MacDonald, St. Thos.; F. M. McGown, Camb. and London; C. W. F. McKean, Camb. and St. Mary's; Arthur Mackler, King's Coll.; P. D. MacLellan, Camb. and Univ. Coll.; L. A. H. McShine, St. Bart's; J. E. Malcolm, St. And.; R. M. Marshall, Cardiff; P. W. M. Martin, St. George's; A. P. Massie, Manc.; Zeta M. U. Matthews, Univ. Coll.; A. J. May, Middlesex; W. R. May, St. Mary's; Ivor Mazure, Charing Cross; H. R. Miller, St. Mary's; D. A. Miln, London; E. L. Moll, Guy's; R. G. W. Moore, St. Mary's; A. D. Newsholme, St. Thos.; James North, St. Bart's; J. R. O'Dowd, Birm.; A. O. A. Ohannessian, St. Bart's; C. A. Osborn, St. Thos.; G. A. Owen, Westminster; Jeanne L. C. Palmer, West Lond.; F. H. Patel, Edin.; Eleanor M. Pearson, Lpool; H. N. Peyton, St. Bart's; C. H. Phillips, Guy's; F. R. Philps, Univ. Coll.; M. F. Pilcher, Univ. Coll.; J. W. Pooley, Birm.; D. P. Porter, St. Mary's; B. W. Powell, Camb. and St. Thos.; Harry Pozner, Univ. Coll.; C. L. Pretre, London; Tom Price, Lpool; T. G. Pritchard, Guy's; Margaret P. Rhodes, Roy. Free; J. E. Richardson, London; P. B. Riley, St. Thos.; Basil Robinson, Cardiff; Benjamin Roditi, Manc.; Kenneth Rostron, Lpool; David Rumney, Univ. Coll.; R. D. Rutherford, St. Thos.; B. W. Sanderson, St. Thos.; P. T. Savage, London; Margaret M. Scholefield, Leeds; F. W. Schulenburg, Cape and London; P. D. Scott, Camb. and London; Israel Segal, Univ. Coll.; D. B. Seymour-Price, Guy's; H. V. M. Shaibany, Manc.; F. S. Shepherd, St. Mary's; Hyman Shepherd, London; D. W. Shields, King's Coll.; Joyce R. Simmons, Roy. Free; C. S. Smalley, St. Mary's; F. M. S. Smith, Westminster; A. T. O. Speirs, King's Coll.; W. A. H. Stevenson, Oxfd and St. Bart's; B. A. Stoll, Westminster; Thomas Sutton Coulson, Oxfd and Middlesex; Edith Taylor, King's Coll.; S. F. Taylor, Oxfd and King's Coll.; L. J. Temple, Univ. Coll.; H. E. Thackray, Manc.; F. D. G. Thomas, Univ. Coll.; G. N. J. Thomas, Guy's; R. G. Thomas, Oxfd and Guy's; Margaret E. Thwaytes, Durh.; J. C. Townley, Middlesex; W. G. Tregea, Birm.; J. C. Turnbull, Univ. Coll.; D. P. B. Turner, Lpool; H. D. Venning, Guy's; J. S. H. Wade, Camb. and Univ. Coll.; J. Y. D. Wakeham, Guy's; D. B. Wallis, Camb. and Lpool; H. R. E. Wallis, Camb. and King's Coll.; Eric Wardle, Lpool; Margery B. Webb, Birm.; S. E. White, Westminster; Francis Whitwell, St. Thos.; G. S. Wigley, Guy's; A. F. Williams, Manc.; Emrys Williams, Guy's; Y. D. Williams, Birm.; N. N. Wilson, London; G. E. W. Wolstenholme, Camb. and Middlesex; B. W. Wood, King's Coll.; I. A. P. S. Wood, St. Thos.; J. C. Wyatt, St. Thos.; and W. J. Zorab, King's Coll.

The following diplomas were granted, jointly with the Royal College of Surgeons, to the following:—

D.T.M. & H.—H. H. W. Bennett, M. L. Bynoe, D. A. Cannon, A. J. P. Coetzee, W. W. Cowen, J. E. F. de Soyza, C. M. Hopkins, E. A. Hunter, L. H. James, Guan-Bee Kruatrachue, Amedeo Limentani, J. M. Liston, K. J. Mann, P. E. C. Manson-Bahr, Ba Maung, R. W. D. Maxwell, M. O. Osnes, D. R. Prem, R. J. Riddell, Mariam P. Samuel, L. M. Sanghvi, D. K. Sundaresan, S. L. Townsend and M. K. Wasti.

D.O.M.S.—G. C. Banerji, C. J. F. Blumenthal, G. K. Burr, W. G. L. Flather, J. B. George, S. N. Gupta, J. L. Hart, B. G. Hill, R. G. Hodder, A. L. Issenman, T. J. P. Kerwick, Anne L. MacDonald, Annabella McGarrity, T. P. Myles, P. K. Pal, W. D. Piercey, Y. E. Pittar, H. B. Porteous, R. L. Raymond, Bridget F. Riordan, A. F. L. Shields, S. R. Sinclair, H. M. Singh, W. K. Smiley, Edith M. Spencer, Harris Stange, H. M. Symons, and L. R. Wynter.

D.M.R.—L. M. Billingham, Madhusudan Das, Michael Gelfand, and B. D. Houston.

Diplomas in anæsthetics, public health, psychological medicine, and laryngology and otology were also conferred on the candidates named at the meetings of the Royal College of Surgeons reported in THE LANCET, June 17, p. 1413, and July 22, p. 230.

The college has closed for cleaning and will reopen on Sept. 11.

Royal College of Surgeons of England

An ordinary meeting of the council of the college was held on July 31 with Mr. Hugh Lett, the president, in the chair. Mr. L. R. Broster was re-elected a member of the court of examiners.

Dr. Alan Moncrieff was elected to an examinership for the diploma in child health under the conjoint Board. Mr. G. K. Harrison was re-appointed a Leverhulme scholar for a second year.

The council decided to apply for the grant of a supplemental charter to give the college power to grant a higher dental diploma entitled "master surgeon dentist," and for power to elect annually to the fellowship not more than four Members of the college of twenty years' standing.

A licence in dental surgery was granted to T. C. Henry. Diplomas of membership and diplomas in tropical medicine and hygiene, ophthalmic medicine and surgery, and medical radiology were granted to the candidates mentioned above in the report of the meeting of the Royal College of Physicians.

The following hospitals were recognised for the six months' surgical practice required of candidates for the final examination for the fellowship:—

Redhill County Hospital, Edgware (the house-surgeons to the two senior surgeons) (under special conditions); Grimsby and District Hospital (resident surgical officer).

University of Oxford

On July 29 the following degrees were conferred:—

J. M. Couchman, L. E. C. Davies, R. G. Eager, and N. A. Neville.

University of London

At recent examinations the following were successful:—

M.D.

Branch I (Medicine).—I. S. Buchanan, M. A. Carpenter, J. E. Cates, C. S. Darke (university medal), R. B. Evans, A. C. Kanaar, David Landsborough, D. H. G. MacQuaide, J. B. Phillips, J. W. Pierce, Hugh Ramsay, J. C. Roberts, G. R. Royston, F. H. Scadding, and J. W. Todd.

Branch IV (Midwifery and Diseases of Women).—Mary A. M. Bigby and C. W. F. Burnett.

Branch V (Hygiene).—J. D. Kershaw, V. N. Leyshon, J. P. McGladdery, and R. C. Wofinden.

FINAL EXAMINATION FOR THE DEGREE OF B.D.S.

J. G. Hancock (with honours); Howell Rees; and D. L. Rugg-Easey.

Group I.—K. R. Titford.

Group II.—W. J. Head.

Scottish Conjoint Board

The following candidates, having passed the final examination, were admitted licentiates of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow:—

Gerald Abromowitz, W. S. Aird, Tom Akroyd, George Alterbaum, F. E. O. Ampofo, D. A. Bird, Milton Bregman G. E. Calvert, R. M. F. Charles, W. J. Curran, W. N. Darling Edward Dengrove, Gerald Dison, Carl Drayer, Edith M. Druitt, R. S. Edington, A. F. Fletcher, W. M. Glantz, H. T. Hardy, Mary K. Hargreaves, Barbara J. Hawke, David Hochman, J. A. Hunter, Philip Jardine, E. R. K. Keatley, Thomas Khattar, R. L. Lawrie, A. S. A. Malek, W. A. W. Maney, F. B. Marke, J. G. B. Maree, S. R. A. Messih, Ian Miskelly, Henry Mullen, A. J. MacIver, W. T. B. McAllister, C. W. Orr, H. R. Pace, E. G. Patchett, Nathaniel Pearl, T. J. Reid, Mary Robertson, A. W. W. Robinson, A. I. Rosenblatt, Cyril Rudd, Louis Ryterband, G. J. Sabrin, C. D. Salmond, Milton Schneider, N. M. Segal, R. M. E. Smith, E. J. Stern, L. L. Theron, G. A. Thompson, C. M. Vanniasegaram, and D. K. Windram.

The following graduates of recognised foreign universities were also admitted licentiates:—

Abraham Adler, A. B. Alexander, D. R. Barry, Adolf Beck, Mar Caraco, Walter Cohn, Wladimir Griffel, Erich Guttmann, Erwin Haberfeld, F. A. Heimann, R. F. H. Hinrichsen, Mirjam Laufer, Elja-Haims Levi, Chain Perec, F. E. Rosenthal, and Ralph Spira.

Association pour la documentation photographique et cinematographique dans les sciences

The seventh congress of this association will be held in Paris on Oct. 12 and 13. Members will meet on the first day at the Palais de la Découverte (Grand Palais), avenue de Selves, and on the second at the Musée Pedagogique de l'État, 29, rue d'Ulm. Further information may be had from Dr. Charles Claoué, 39, rue Scheffer, Paris, 16.

Kathleen Schlesinger Fellowship

The Medical Research Council have appointed Dr. Gwenvron Griffiths to this fellowship for the year 1939–40. The fellowship is provided from a fund established by the late Mr. Eugen M. Schlesinger and Mrs. Schlesinger in memory of their daughter, and is given for investigations of cysts of the brain or allied conditions. It is ordinarily tenable at the National Hospital for Diseases of the Nervous System, Queen Square, London.

St. Mary's Hospital

The annual dinner of the medical school will be held at Claridge's on Saturday, Sept. 30. Dr. Walter Broadbent will be in the chair. The annual postgraduate course, which is open to all practitioners without fee, will take place on Sept. 28, 29, 30, and Oct. 1.

Industrial Health Research Board

The Medical Research Council have appointed Dr. Donald Hunter and Mr. Harold E. Clay, national secretary of the passenger services group of the Transport and General Workers' Union, to be members of their Industrial Health Research Board in succession to Prof. J. A. Nixon and Mr. R. Coppock.

Evacuation and Billeting

The Minister of Health is urging local authorities to stress the importance of registration of children to be evacuated. House-to-house canvassing, it is suggested, should as far as possible be done in the evening when both parents are at home. Appeal tribunals are to be set up in an emergency in each district, to which householders aggrieved by billeting requirements may appeal. Each tribunal will have three members, of whom one would be a woman. Evacuating authorities are to see that enough midwives are sent with the expectant mothers. Arrangements are also in hand for extra isolation accommodation for infectious illnesses and for midday meals at school for evacuated children. Prepaid postcards are to be supplied on which the children and mothers may inform their families of their new address.

War Neuroses

On July 3 the Minister of Pensions summoned a conference of specialists in nervous diseases and representatives of the Services to discuss the mental and emotional disturbances liable to arise in war-time, and to advise him as to the basis on which treatment and compensation for "fear-neurosis" would best be applied in a war. The chair was taken by Lord Horder and those present included Sir Hubert Bond, Sir Farquhar Buzzard, Dr. Bernard Hart, Dr. Gordon Holmes, Mr. J. H. Macdonald, Dr. E. Mapother, Dr. H. Crichton-Miller, and Dr. W. Aldren Turner, the directors-general of the medical services of the Air Force, Army, and Navy, and medical and other representatives of the Ministry of Pensions. A subcommittee was appointed to put forward a practical scheme and this held its first meeting on July 31.

Nursing Conditions

The Minister of Health has issued a circular to local authorities drawing attention to certain suggestions made with regard to conditions of work in hospital nursing by the Athlone committee. The accommodation in the nurses' home, the circular points out, should reach a proper standard of comfort. Permission to live off the premises of the hospital might be more freely given, particularly if married nurses are in future (as is proposed) more widely employed. Nursing staff, including probationers, should as far as possible be relieved of domestic work through the employment of ward-maids and orderlies. Hospital rules should be revised in order to secure the removal of unreasonable restrictions which have often caused dissatisfaction. All hospitals should have a time-table showing on-duty and off-duty times for at least a fortnight in advance, and nurses should have at least four weeks' annual leave, with proper notice well in advance. The standard of catering for the staff should be improved and more care should be devoted to the nurses' health. Reforms of this kind are desirable not only in order to overcome the shortage of recruits to the nursing profession, but also because they promote the primary object of nursing care, the well-being of the patient, by ensuring the health and contentment of the nurse.

At the meeting of the council of the Royal College of Nursing on July 20 Miss Coode, the vice-chairman, reported that the Minister of Health had given sympathetic consideration to the proposals of a deputation from the college dealing with the control of the assistant nurse, negotiating machinery for the nursing profession and pensions. The deputation asked that the Government would promote legislation for the licensing of all "who nurse habitually and for gain" so that the public and the state-registered nurse will be protected against competition from unqualified persons and the public cannot be served by an "assistant nurse" when they think they are employing and are paying the fees for a state-registered nurse. The college advocated one general national pension scheme and proposed that the federated superannuation scheme for nurses and hospital officers (contributory) should be adopted for this purpose. This would permit complete freedom for every nurse to move from one service to another as her career advanced and would benefit nursing as well as the individual.

TINCTURES BY THE TON

THE supplies department of the L.C.C. has to cater for the physical and mental needs of 113,000 patients, inmates and staff of the L.C.C. institutions, not to mention 800,000 teachers, students and school-children who for part of each day are in the council's hands. It is responsible not merely for obtaining estimates and making purchases, but also for storage, delivery and stocktaking. Its story for 1938–39 is told by W. T. Wilson, the chief officer of supplies, in his annual report. No less than 459,064 orders were given to the contractors in the course of the year. In the 1938 crisis the department arranged to buy and distribute among other things about 200 miles of black Italian cloth, 150,000 Rawlplugs, 250,000 yards of wire, 28,800 night-lights, and 54,000 candles. The medical supplies section thinks in astronomical terms. No less than 266,000 sulphonamide tablets, 1,284,000 cascara extract tablets, 2,300,000 aspirin tablets and 11,000,000 "tablets, various" found their way into the L.C.C.'s capacious dispensaries, if not into their hungry patients' maws. Other staggering figures are 11,400,000 units of insulin, 330,000 c.cm. of ethyl chloride, 531,312 corks, 79,096 pairs of surgeons' gloves, 39,315 clinical thermometers, 351,012 X-ray films, 16,897,000 yards of bandage and 1,556,000 sanitary towels. It is pleasing to see that administrative expenses amount to only 1·38 per cent. of the total value of supplies (compared with 1·54 per cent. in 1936–37), while costs of receiving, storing and issuing amounted to 8·27 per cent. (compared with 9·21 per cent. in 1936–37).

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 22, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1925; diphtheria, 870; enteric fever, 21 (59 "expected"); pneumonia (primary or influenzal), 474; puerperal pyrexia, 194; cerebro-spinal fever, 28; acute poliomyelitis, 16; acute polio-encephalitis, 2; encephalitis lethargica, 4; dysentery 30; ophthalmia neonatorum, 92. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on July 28 was 2900, which included: Scarlet fever, 767; diphtheria, 501 (carriers, 19); measles, 17; whooping-cough, 740; puerperal fever, 8 mothers (plus 5 babies); encephalitis lethargica, 306; poliomyelitis, 9. At St. Margaret's Hospital there were 19 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox or enteric fever, 2 (0) from measles, 1 (0) from scarlet fever, 8 (2) from whooping-cough, 13 (2) from diphtheria, 36 (11) from diarrhœa and enteritis under two years, and 6 (0) from influenza. The figures in parentheses are those for London itself.

West Ham reported 2 deaths from whooping-cough. Fatal cases of diphtheria were scattered over 10 great towns, Croydon and Manchester each reporting 2. Portsmouth and Birmingham each had 4 deaths from diarrhœa.

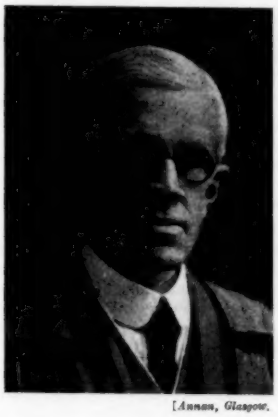
The number of stillbirths notified during the week was 213 (corresponding to a rate of 34 per 1000 total births), including 40 in London.

OBITUARY

ARCHIBALD YOUNG

M.B., B.SC. GLASG., F.R.F.P.S., F.A.C.S., D.L., J.P.

Archibald Young, who died on July 23, aged 65, was for fifteen years professor of surgery in the University of Glasgow. In the regius chair he was in the line of Macleod and Macewen; his life was consciously directed to enhance its dignity. A gift for teaching was stimulated and developed by a wealth of experience collected in many lands. He had a natural affinity for study and maintained to the end a strong and lively interest in the welfare of students; during his tenure of the chair he kept ever before him the advancement of scientific surgery by collaboration with other workers and by fostering in his assistants the spirit of research. It was no small achievement for a man of his temperament, for as was well said by the Principal of the university, when accepting Young's portrait a week before his death, he had not been very skilful in the art of compromise. There was, the Principal surmised, hardly anyone present in that distinguished gathering who had not been at some time or other Young's opponent. And Young himself, in returning thanks, said he could remember the time when members of his hospital staff were barely on speaking terms with one another; he felt he had himself played some part in turning unhealthy rivalry into helpful exchange of views. What touched him in his own portrait was a suggestion of kindliness which he did not think his face could ever portray; it was, however, the verdict of his colleagues that, although a bonnie fighter, no-one with whom he had been brought into contact had ever been his enemy.



[*Annan, Glasgow.*

Archibald Young was born in Glasgow on Nov. 10, 1873, and was educated at the high school and university where he graduated in science before starting on medicine, his particular interest then being vertebrate anatomy. Qualifying in 1895 he held house appointments and took a voyage as ship's doctor before becoming private assistant to Coates in the department of pathology and spending two years as senior assistant to Macewen. Then the South African war claimed him as civil surgeon and he found an interest in peripheral nerve injury which never left him. His work is published in the official surgical report of that war. Twenty-five years later, at the suggestion of the Medical Research Council, he was attached as neurological expert to the Scottish Command at the 4th Scottish General Hospital. The results of his war studies were embodied in a paper read to the International Congress of Surgery in 1923 and at the Cairo congress of 1936 he summed up what he had learned of sympathetic surgery. Periarterial neurectomy, which had in his hands yielded 65 per cent. of successes, had he felt fallen into undeserved neglect. Young was optimistic on the uses of ganglionectomy in Raynaud's disease, in Hirschsprung's disease and even in chronic arthritis, although other surgeons failed to verify his success and doubted the ability of periarterial sympathectomy to relieve many types of peripheral pain. Young had his own left brachial artery stripped as one step in the treatment of chronic X-ray dermatitis with ulceration; the first operation relieved his pain and grafts survived on the ulcers, but further intervention a year later failed in both respects.

Young was on the surgical staff of the Western Infirmary for 37 years; he was professor of surgery at Anderson College from 1913 and for many years dean of the college. At various times he was president of the Royal Medico-Chirurgical Society of Glasgow, of the Association of Surgeons of Great Britain and Ireland and of the Royal Faculty of Physicians and Surgeons of Glasgow. Many foreign distinctions fell to him; he was one of the few foreign members of the Royal Academy of Physicians in Rome and his intimate knowledge of Italian and French brought him many contacts not only with the work of foreign surgeons but with the surgeons themselves. At Strasbourg, whose university made him an honorary graduate, he was a familiar figure. Lately he had completed a translation of Leriche's "Surgery of Pain."

Professor Leriche writes: "Le stoïcisme discret d'une fin douloureuse, qu'il a vu venir de face, a clairement montré l'exceptionnelle hauteur morale de cet homme loyal et droit, qui fut un travailleur obstiné, de cet homme de caractère qui cachait sous une apparente réserve, parfois ironique, une fine sensibilité et un grand charme d'esprit. Le 2 juillet, il m'écrivait son diagnostic impitoyable. 'J'ai été heureux,' ajoutait-il, 'd'avoir pu tenir jusqu'au bout de l'année universitaire. I have managed to keep the flag flying. Je suis résigné et vous fais mes adieux.' Ses dernières semaines doivent rester pour nous tous un exemple et une leçon.

"Le chirurgien chez lui ne pouvait pas être séparé de l'homme. Il était personnel, consciencieux, probe, sincère avec lui-même et avec les autres. L'opérateur était net et précis, mesuré et décidé. Il avait participé à deux guerres. Il s'était intéressé aux blessures des nerfs. Il avait vu souffrir. Il avait souffert lui-même. Ses pauvres doigts mutilés avaient bénéficié d'une opération décriée. Dès lors, il voua le meilleur de lui-même au problème de la douleur et à la chirurgie du sympathique.

"Bien qu'il fut mon aîné, il avait voulu un jour venir voir mes opérés anciens et récents, désireux de fortifier sa documentation écrite. Nous vécûmes ensemble quelques jours de pleine compréhension, et, peu après, en 1931, dans un mémoire remarqué, il prit fait et cause pour la sympathectomie péri-artérielle, rejetée par beaucoup comme une erreur physiologique à coup sûr inefficace, malgré tant de succès obtenus à peu de frais. Cette sincérité objective, qui ne s'embarrassa pas de la théorie, était une des caractéristiques de son esprit. Aussi, en 1936, au Congrès International du Caire, éleva-t-il brusquement un débat officiellement limité et jeta dans la discussion, sur la base de 72 observations personnelles, tous les procédés de la chirurgie du sympathique. Sa contribution d'alors, à l'étude comparée de la sympathectomie péri-artérielle et des gangliectomies demeure une des plus décisives qui soit, nuancée, objective, dans la ligne étroite des faits d'observation.

"Le thème de la douleur le passionnait de plus en

plus. Il en avait compris la haute portée sociale et la valeur de renouvellement pour la médecine entière. Aussi, quand, en 1937, parut un livre sur la chirurgie de la douleur, qui s'efforçait à une synthèse, il demanda aussitôt le privilège d'en faire la traduction. La tâche était rude, ingrate. Bien que souffrant déjà lui-même, il se mit au travail avec une ardeur juvénile. Avec une conscience scrupuleuse, il s'ingénia à surmonter toutes les difficultés d'une pensée parfois abstraite, d'une langue concise et personnelle, souvent intraduisible. Il retournait les idées et les mots comme il eut fait des symptômes dans un diagnostic hésitant, jusqu'à ce qu'il fut assuré de ne rien trahir. Un an après, son livre paraissait. Il eut la grande joie de le voir bien accueilli, conscient d'avoir fait une oeuvre utile pour ses frères en douleur.

"Il voulait poursuivre cette étude de la douleur. Hélas, comme il le disait, avec un humour amer, le 17 juillet, alors qu'on lui remettait le beau portrait que James Gunn a fait de lui: 'One is more or less sure of today; one is less sure of tomorrow.'

"Pour moi, qu'une amitié profonde, qu'une vraie fraternité intellectuelle unissait à Archibald Young, je veux lui dire, avec mon cordial adieu, un remerciement ému pour l'aide qu'il m'a apportée dans la diffusion des idées aux-quelles j'ai consacré ma vie, en sachant être, lui qui était un Maître, le meilleur des collaborateurs."

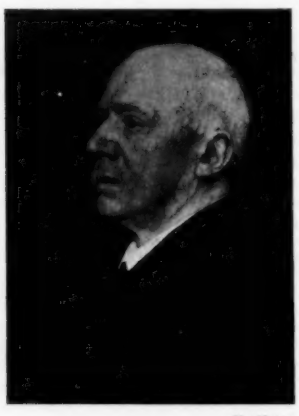
Professor Young married in 1911 Anna Stuart and leaves his widow with two sons, one of whom has recently graduated in medicine at Glasgow.

ROBERT WILLIAM REID

M.D., LL.D ABERD., F.R.C.S.

Professor Reid, who occupied the regius chair of anatomy in the University of Aberdeen for thirty-six years, died on Friday of last week.

He was born at the manse of Auchindoir, Aberdeenshire, in 1851, being the second son of the Rev. William Reid, minister of that parish. He studied at Aberdeen University, graduating as M.B. in 1872 and M.D. three years later; in 1881 he became a Fellow of the Royal College of Surgeons of England. He began his career as an anatomist in his alma mater by acting as assistant for a year to Sir John Struthers. Thereafter, at the early age of 22, he was appointed demonstrator at St. Thomas's Hospital medical school, London, where he became lecturer in anatomy in 1877. One of the first whole-time anatomists in the London medical schools, he not only reorganised the anatomy department at St. Thomas's but found time for pioneer research upon the topography of the brain, and to THE LANCET of Sept. 27, 1884, he contributed Observations on the Relation of the Principal Fissures and Convolutions of the Cerebrum to the Outer Surface of the Scalp—a paper describing and illustrating what has since been called Reid's base line. To his work as anatomist he added the duties of vice-dean of the medical school. In 1887, when the Anatomical Society of Great Britain and Ireland was founded, he became one of its original members, being elected to its first council and later he filled with distinction the office of president.



MacMahon

Reid was appointed regius professor of anatomy at Aberdeen in 1889. With characteristic energy he planned and obtained new rooms for practical work and research, and refurnished the museum to serve teaching purposes. As a fellow of the Royal Anthropological Institute of Great Britain and Ireland he was particularly interested in anthropology, and he set up an anthropometric laboratory where physical characteristics of students were systematically recorded. Three important papers based on the data thus obtained were published in collaboration with J. H. Mulligan in the *Journal of the Royal Anthropological Institute*. His inception and elaboration of the anthropological museum in the Marischal College at Aberdeen, to which he devoted much time in his retirement, is a remarkable and enduring monument to his memory. Amid innumerable objects of interest, carefully catalogued by Reid himself, the museum contains many of his own finds as an investigator of the inhabitants (both prehistoric and modern) of north-east Scotland. He cared about the living as well as the dead, and gave useful public lectures on the structure and care of the body. A lectureship in anthropology in the university already bears his name.

Reid took a large part in university administration, as dean of the medical faculty, member of the university court, and representative on the General Medical Council from 1896 to 1901. Former students will recall not only his qualities as a teacher, but one who had ever a keen and kindly interest in their welfare. He was a disciplinarian but was just and considerate. He remembered his old pupils long after they left him, and he was known for his helpfulness towards medical students who came from abroad. He never married, but his house in Albyn Place, where his sister looked after him till her death six months ago, had an ever-open door.

Professor Reid's elder brother was the late Major-General Sir Alexander Reid, the younger was William Reid, medical superintendent of the Aberdeen Royal Asylum.

GEORGE C. M. M'GONIGLE

M.D., D.HY. DURH., D.P.H.

Dr. M'Gonigle died on Sunday last, aged 51, at Stockton-on-Tees, where he was medical officer of health. He had spent his life in the public-health service and it was natural that in an area where problems of nutrition had been so urgent since the decline of local industries his reports were increasingly full of expedients for the relief of malnutrition. Early in 1933 he leapt into notice with a paper read at the Royal Society of Medicine on the strange results of removing a slum population. Six years before, some 150 families had been evacuated from the Housewife Lane area, which consisted largely of one-room tenements of bad structure and hygiene, to model houses on the Mount Pleasant estate which seemed to offer everything that sanitary science could demand. Nevertheless this sublimated slum population was demonstrably less healthy than a similar population in the Riverside area which remained in its depressed conditions. Many forms of disease contributed to the increased death-rate,

measles, cancer, heart conditions, bronchitis and pneumonia predominating. This preliminary survey was followed in 1936 by a book, entitled "Poverty and Health" (in collaboration with J. Kirby), in which he discussed the lessons of a population removed from a slum area to a new housing estate, when the increased rent reduced the margin available for food. Statistically the samples were small but M'Gonigle's knowledge of local conditions and his ability to analyse the expenditure of the poor justified him in assigning to the shortage of protein the blame for such a large (he calculated it as a fourfold) increase on the expected death-rate.

M'Gonigle was born and remained a Northumbrian. The only son of Canon M'Gonigle, formerly vicar of Ellingham, he qualified at Newcastle in 1910 and held resident posts there and at Sunderland before going to Rampton where he became deputy superintendent. After serving five years in the war, mostly in France and Italy, he returned to enter the school medical service.

Dr. J. A. Charles writes: At the Royal Victoria Infirmary, Newcastle, M'Gonigle was house-surgeon to Rutherford Morison. At a comparatively early stage in his career he took the diploma in public health, and entered the public-health service as a member of the staff of the Durham county health department. Whatever may have influenced him in taking this step, whether the family association with local government, for his father, Canon M'Gonigle was for many years a member of the Northumberland county council, or the realisation that for the biologically-minded public health offered unexplored opportunities, it was a decision of no little importance to preventive medicine in this country. After a short period with the Durham authority, M'Gonigle became medical officer of health of Stockton-on-Tees, in 1924. In this borough where he was both in word and fact a general practitioner of public health, carrying out all the duties of his office with one medical assistant, he spent the remainder of his life. Other men, with smaller gifts of mind, have travelled further, but M'Gonigle set aside all his disappointments, and they were many, to immerse himself in the problems of distress and poverty which for many years were outstanding in the life of Stockton. He tackled one question after another—rickets, dental caries, the nutrition of the rehoused slum-dweller—mastering his techniques as he went along, and everything he touched he stripped a little nearer to the central truth. There can have been but few more industrious field-workers and none more modest or diffident in discussing his achievements, or more helpful to those of his colleagues in the service who looked to him for guidance and inspiration. The tributes which most delighted him were invitations to extend the range of his activities and inquiries and requests for his coöperation on departmental and other public committees. To all of these he contributed abundantly, and they compensated him for the preferment which he deserved so richly but never obtained.

But apart from his absorption in social medicine, M'Gonigle had other interests. His friends recognised him as a wise counsellor and elected him to office in the Society of Medical Officers of Health and the B.M.A. He helped to reorganise his old medical school of which for many years he was a governor. To those who knew M'Gonigle only as a recorder of his researches in clear and simple English his real eloquence as a speaker came as a surprise, and he was in frequent demand on public platforms throughout the North of England. An old infantile paralysis had left him slightly lame, but it also made him the constant friend of every cripple and every handicapped child. He was a keen fisherman and his disability did not prevent him from becoming an expert and lively swimmer. His early life in a Northumberland parish gave him a love for both the sea and the countryside. That in recent years he overtaxed his strength there can be no question, but his restless and inquiring mind was never content to be idle. Time was somehow found for new work or to give ungrudgingly and gladly to others the help for which they sought. His great characteristics were courage, honesty of purpose, friendliness and loyalty. An eager and fascinating spirit has left us, but his work and example will remain.

WILLIAM J. MAYO

M.D., D.SC., LL.D., F.A.C.S., F.R.C.S.

William Mayo, who died on July 28 at the age of 78, was the elder of the brothers who founded the Mayo Clinic at Rochester, Minnesota. On the death of Charles Mayo two months ago we gave some account of their origin and early years, and told how their father, William Worrall Mayo, trained them in general practice. It was in 1889, six years after William junior graduated at the University of Minnesota, that the three Mayos were invited to staff St. Mary's Hospital, just opened—with high hopes but few beds—by sisters of the Order of St. Francis. Two years later W. J., as he was called, made the first of his 690 contributions to medical literature; but it was not until the turn of the century that the work of the little Rochester hospital began to be known elsewhere. The story goes that William then sent a paper to the *Annals of Surgery* recording so many cases of gall-stones treated so successfully that the editor could scarcely believe it, and went to see for himself. He was the first of a stream of visitors that has never ceased since. From that time W. J. had in mind the idea of a great clinic or medical centre where group medicine could be practised with its fullest effect. In working out this idea his brother Charles was the first and foremost of his collaborators; but it was William who created it and surmounted all difficulties until it bore fruit. He lived to see it flourish abundantly, and the brothers Mayo have died with the satisfaction of knowing that their organisation, like many of their ideas, is securely established and will work without them.

After going to Rochester in 1906 Prof. Grey Turner wrote: "Wherever you travel among surgeons in America you are asked, 'Have you seen the Mayos?' and everyone seems either to have been at Rochester or to be going. Weir, of New York, speaking of the Mayos at the British Medical Association meeting in Toronto, said that for big game his countrymen always looked to the North-west, and it was the same in surgery. The Mayos were the doctors' surgeons, and when doctors went to be operated upon in Rochester they always took return tickets!" On this first visit Prof. Grey Turner was impressed by the rational arrangements; the brothers recognised that "method is the harness without which only the horses of genius travel." He noted with

interest the presence of a (well-paid) pathologist at every operation, and the administration of anæsthetics by women; and he admired the Mayos' kindness to visitors, their desire to further the science and art of surgery, their devotion to one another, their industry, their simple technique, and their excellent results. At that time, thirty-three years ago, they had already performed partial gastrectomy in 150 cases of cancer of the stomach with a mortality of only 10 per cent. and a three-year survival-rate of nearly 30 per cent.; indeed in 1906 they had 36 cases with but 1 death. William Mayo had no use for "the hopeless gastro-enterostomy which enables the patient to live longer and suffer more." With such statistics, said the onlooker, the physician living within travelling distance of the Mayos had no choice but to send them his patients; "and I only wish that our young physicians would with their own eyes go and see what things may be."

At that time the elder Mayo was dreaming of great schemes for improving surgical education and not long afterwards the Mayo Foundation came into being, by which men are enabled to go to the clinic for three years' sustained study, receiving not only their keep but also substantial allowances. Rarely can the subject of an obituary speak for himself, but the following extracts from a letter accompanying a large gift to the University of Minnesota reflect the sincerity, purpose, and fidelity of the writer:—

"Our father recognised certain definite social obligations. He believed that any man who had better opportunity than others, greater strength of mind, body, or character, owed something to those who had not been so provided; that is, that the important thing in life is not to accomplish for one's self alone, but for each to carry his share of collective responsibility. Stepping as we did into a large general practice, with a great deal of surgery from the beginning, my brother and I had an exceptional opportunity, and as we entered medical practice during the early period of development of asepsis and antisepsis in surgery which had come through the work of Pasteur and Lister, this opportunity was unique. We were especially fortunate that we had the benefit of our father's large experience to help us apply the modern methods to replace the old type of surgery which up to that time had been practised. There being two of us, with absolute mutual confidence, each of us was able to travel at home and abroad each year for definite periods of study of subjects connected with surgery, as well as to attend medical meetings, while the other was at home carrying on the practice.

"In 1894, having paid for our homes and started a modest life insurance programme, we decided upon a plan whereby we could eventually do something worth while for the sick. This plan was to put aside from our earnings any sum in excess of what might be called a reasonable return for the work we accomplished. It seemed to us then, as now, that moneys which should accumulate over and above the amount necessary for a living under circumstances which would give favourable conditions to work and to prepare reasonably for our families, would interfere seriously with the object that we had in view.

"Contented industry is the mainspring of human happiness. Money is so likely to encourage waste of time, changing of objectives in life, living under circumstances which put one out of touch with those who have been lifelong friends, who perhaps have been less fortunate. How many families have we seen ruined by money which has taken away from the younger members the desire to labour and achieve and has introduced elements into their lives whereby, instead of being useful citizens, they have become wasteful and sometimes profligate.

"Medicine constantly became more complex. From time to time new members were added to the staff. Each member of the staff received a salary which was sufficient to permit wholehearted attention to his work. There was no profit-sharing—accumulations over and above the amount necessary for the purposes I have outlined were conservatively invested, and have been reinvested, adding all interest to principal.

"Year by year more young physicians applied for positions as assistants and internes in the hospitals. The need of providing in some way a better form of postgraduate medical education for these earnest young men soon became apparent. . . .

"The fund which we had built up and which had grown far beyond our expectations had come from the sick, and we believed that it ought to return to the sick in the form of advanced medical education, which would develop better trained physicians, and to research to reduce the amount of sickness. My brother and I came to the conclusion that this purpose could be best accomplished through the state university.

"In 1913, when our fund seemed to be of sufficient size to warrant the endowment of a foundation at the University of Minnesota to carry out these purposes, we proposed the affiliation. After careful consideration, the arrangements were agreed upon June 9, 1913. My brother and I gave to the University of Minnesota a million and a half dollars, which was the entire fund which we had been able to accumulate up to that time, to found the Mayo Foundation for Medical Education and Research, with the understanding that the sum should reach two millions or more before any part of the income should be expended. . . .

"Nineteen years have gone by since the Mayo Foundation for Medical Education and Research was established. The association between the University and the Foundation at Rochester has been most harmonious, and has been distinguished by splendid coöperation on both sides for the benefit of higher medical education and research. The people's money, of which we have been the moral custodians, is being irrevocably returned to the people from whom it came."

Here then is the mature yet unpretentious philosophy upon which the Mayo Clinic has grown and prospered. Its development and work have become phenomenal. The clinic itself is now so many stories high that it has to be surmounted by a red light on the roof lest it be struck by planes on the Chicago-Minneapolis route. But besides the clinic there are many other additions like the hospital floors in the Hotel Kahler, the institute of experimental surgery, the museum on the site of the school where William learnt the rudiments, the hospital laundries, and a host of other activities incidental to what is really a town devoted to healing.

But Dr. Will was always on the alert to foster the cultural side of the organisation; the record department with its hundred clerks, and the well-stocked library with its study rooms, are examples. Staff meetings of all sorts became a regular feature, assistants were encouraged to write for the *Proceedings*, and Mayo himself produced large numbers of valuable papers recording his huge experience in many branches of surgery, especially on the stomach, the intestines and the biliary tract. Their breadth and range can scarcely have been equalled.

In his active professional life of 56 years he became America's most celebrated surgeon, honoured with degrees from twenty-seven universities in twenty different countries. In an age of giants, writes Mr. A. H. McIndoe, this man stood head and shoulders above the rest, and it is probable the world will never see his like again. His powers of concentration and his iron constitution made him a natural leader, and beginning his career at a time when Lister's principle had been firmly established he

helped in the growth of modern surgery in a community whose economic expansion was just as swift.

Prof. Grey Turner puts it like this. "It has been said that William Mayo was a great administrative surgeon, and that was certainly true. He was a man of wide outlook and big ideas who would have shone in big business of any sort. But he was also a great doctor and a fine surgeon whose principal ambition was to heal the sick and to give a fairer deal to the patient. In all he did he was absolutely honest and I have never known anyone more ready to acknowledge a mistake. In many ways he was a giant, but withal a man of simple tastes and small personal ambition who loved his fellow men and the profession which enabled him to serve them."

Dr. William Mayo married in 1884 Hattie M. Damon, and she survives him. One of his two daughters is the wife of Dr. Donald Balfour.

FRANKLEN FRANKLEN-EVANS

M.D. CAMB., D.P.H.

Dr. Franklen-Evans, who died at Buxton on July 26 at the age of 76, was for many years associated with the Devonshire Royal Hospital there. The second son of Franklen George Evans, J.P., of Llwynarthen, near Cardiff, he studied chemistry at University College, Bristol, and was exhibitioner at St. John's College, Cambridge, before going on to clinical work at St. George's and University College, London. His appointment in 1912 as bacteriologist and radiologist to the Buxton hospital gave him the facilities he desired to continue the study of rheumatoid arthritis begun with Strangeways at Cambridge. He was one of the earliest workers in the vaccine treatment of arthritis and had great confidence in a strain of streptococci which he isolated by cultural methods of his own. His clinical colleagues certainly saw good results from its employment, but, although he made extensive notes and must have accumulated masses of records, Franklen-Evans did not communicate them either to his colleagues or to any learned society. After resigning his appointment in 1924 he married as his second wife one of the hospital sisters and continued to work privately as a bacteriologist. Outside his work he had many interests, ranging from old music to geological specimens, about which he talked with enthusiasm once the ice was broken.

JENNER AND NAPOLEON

"Jenner! Ah, to that man we can refuse nothing," said Napoleon. The story is a tribute both to Jenner's fame and to the Emperor's enlightenment. It was the immediate response to Jenner's petition for the release of two of his friends from detention as prisoners-of-war. Prof. J. A. Nixon in a delightful little essay (*Proc. R. Soc. Med.* June, 1939, p. 877) has given us the details not only of this event but of the many other efforts made by Jenner to secure the release of prisoners-of-war both in France and Spain during the unhappy period that followed the demise of the peace of Amiens. Such was Jenner's fame that, says Professor Nixon, "English travellers left our shores not with a passport signed by a minister of state, but with a simple certificate bearing the name of Edward Jenner." In recording these examples of Jenner's successful, and sometimes unsuccessful, intervention, Professor Nixon reminds us of the honourable tradition of our profession that science knows no national boundaries, but he omits to point out what seems so remarkable and at the same time creditable to science generally, that Jenner leapt into world-wide fame in less than ten years from the first publication of his researches.

Appointments

BELLINGHAM, ROGER, M.B. Edin., resident surgical officer at the Royal Salop Infirmary, Shrewsbury.

BREMER, J. K., M.B. Cape Town, F.R.C.S., resident assistant medical officer at the County Hospital, Kingston-on-Thames.

BROWN, G. S., M.B. Edin., F.R.C.S.E., M.R.C.O.G., hon. gynæcologist to the Hull Royal Infirmary.

BURCH, JACQUELINE V., M.R.C.S., resident assistant medical officer at the Maternity Hospital, Dewsbury.

CORFIELD, CHARLES, M.D. Durh., hon. and consulting anæsthetist to the Bristol General Hospital.

CRAIG, W. J., M.B. Dubl., D.M.R.E., hon. radiologist to the East Ham Memorial Hospital.

FRASER, PHYLLIS M. FARNCOMBE, M.B. Lond., D.M.R., assistant radiologist to the South London Hospital for Women.

GREENER, JOAN E., M.B. Birm., D.P.H., D.P.M., medical officer to the Mental Deficiency Act Committee for Birmingham.

HANDLEY, R. S., M.B. Camb., F.R.C.S., surgical registrar at the Middlesex Hospital, London.

HIGHET, W. B., M.B. N.Z., F.R.C.S., resident medical officer at the Royal Cancer Hospital (Free), London.

HUGHES, T. LLOYD, M.D. Lpool, D.P.H., barrister-at-law, medical officer of health for Bebington and medical superintendent of the Wirral Joint Isolation Hospital.

LANCKENAU, NELLIE I., M.D. Lond., medical officer in charge of the electrotherapeutic department of St. Mary's Hospital, London.

LAWSON, H. P., F.R.C.S.E., D.L.O., L.D.S.R.C.S., hon. assistant laryngologist to the Hospital for Consumption, Manchester.

LEYSHON, V. N., M.D. Lond., D.P.H., deputy medical officer of health for Dewsbury.

LIGHTWOOD, REGINALD, M.D. Lond., F.R.C.P., D.P.H., physician to the department for diseases of children at St. Mary's Hospital, London.

MCALLUM, MIRIAM K., M.B. Glasg., M.M.S.A., assistant medical officer for maternity and child welfare for Preston.

MAXWELL, B. M., M.D. Belf, D.M.R.E., assistant to the radiological department of the Royal Infirmary, Gloucester.

MOORE, C. A., M.S. Lond., M.Ch. Brist., F.R.C.S., hon. and consulting surgeon to the Bristol General Hospital.

MOORE, LEONARD, M.B. Brist., hon. and consulting anæsthetist to the Bristol Royal Infirmary.

PEPPER, ELIZABETH, M.B., Lond., D.M.R.E., radiologist to the South London Hospital for Women.

PILE, G. C. L., M.B. Camb., F.R.C.S., surgical registrar at the Middlesex Hospital, London.

ROSE, K. W., L.D.S. Birm., assistant school dentist for Nottingham.

RUBIN, JACK, M.B. Cape Town, F.R.C.S.E., resident surgical officer at the Royal Hampshire County Hospital, Winchester.

TAYLOR, N. S., M.B. Lpool, assistant medical officer in the venereal diseases treatment centre, Salford.

THOMSON, JAMES, M.B., resident medical officer at the Isolation Hospital, Haine, Thanet.

WILSON, A. J., M.D. Edin., M.R.C.P.E., visiting consulting physician to Nuneaton General Hospital.

Middlesex County Council.—The following appointments are announced:—

CASTLEDEN, L. I. M., M.D. Lond., M.R.C.P., physician (grade II) at the Redhill County Hospital, Edgware;

COOKSEY, F. S., M.D. Lond., visiting electrotherapist at the Redhill County Hospital, Edgware;

HANLEY, H. G., M.D. Lpool, F.R.C.S., assistant medical officer at Hillingdon County Hospital, Uxbridge;

ROGERS, KATHARINE C., M.R.C.S., assistant medical officer at the West Middlesex County Hospital, Isleworth;

MURPHY, MARY G., M.B. Lond., junior assistant medical officer at the North Middlesex County Hospital, Edmonton; and

FOULSHAM, W. G., M.B. Sydney, junior assistant medical officer at the North Middlesex County Hospital Edmonton.

National Dental Hospital, London.—The following appointments are announced:—

HALLON, DOUGLAS, M.R.C.S., L.D.S.R.C.S., hon. assistant dental surgeon;

GREEN, C. DE VERE, L.D.S.R.C.S., D.D.S. Toronto, hon. assistant dental surgeon; and

SCHOFIELD, JAMES, M.R.C.S., L.D.S.R.C.S., hon. assistant dental surgeon.

St. Paul's Hospital, London.—The following appointments are announced:—

CALTHROP, G. T., M.D. Camb., D.M.R.E., radiologist;

HANLEY, H. G., M.D. Lpool, F.R.C.S., hon. urological and cancer registrar;

UNDERWOOD, W. E., M.B. Camb., F.R.C.S., assistant surgeon;

SEMPLE, J. E., M.D. Camb., F.R.C.S., assistant surgeon; and

HIGHAM, A. R. C., M.B. Lond., F.R.C.S., assistant surgeon.

Bristol Royal Infirmary and the Bristol General Hospital (Amalgamated).—The following appointments are announced:—

CAPPER, W. MELVILLE, M.B. Lond., F.R.C.S., M.R.C.O.G. hon. assistant obstetrician;

BRADBEER, E. G., M.R.C.S., D.A., hon. anæsthetist; and

LOGAN, H. B., M.R.C.S., D.A., hon. anæsthetist.

Vacancies

For further information refer to the advertisement columns

Anglesey County Council.—Asst. county M.O.H., £600.
Argyll, Argyll and Bute District Mental Hosp.—J.A.M.O., £350.
Ashton-under-Lyne, Lake Hosp.—Res. obstet. O., £350.
Barrow-in-Furness County Borough.—Asst. M.O.H., £500.
Beckenham Hosp.—Res. M.O., at rate of £150.
Bedford County Hosp.—First and second H.S., at rate of £155 and £150 respectively.
Birmingham, Monyhull Colony Mental Deficiency Institution.—Med. supt., £1000.
Birmingham University.—Lecturer in physiological dept., £400.
Bootle General Hosp.—H.S. to spec. depts., at rate of £150.
Bradford, Municipal General Hosp.—H.P.'s and H.S.'s, each at rate of £150.
Bristol Royal Infirmary.—Sen. res. M.O., £200.
Bury County Borough.—Deputy M.O.H., £750.
Cardiff, King Edward VII Welsh National Memorial Association. Three half-time asst. tuberculosis O.'s, each £250.
Carlisle, Cumberland Infirmary.—Res. surg. O., £250. Also H.P., H.S., and H.S. to spec. depts., each at rate of £160.
Colchester, Royal Eastern Counties' Institution, &c.—Med. supt. for Bridge Home, Witham, £750.
Devon County Council.—Asst. county M.O.H. and district M.O.H., £800.
Dover, Royal Victoria Hosp.—Two R.M.O.'s, each £140.
Dudley, Guest Hosp.—Res. surg. O., at rate of £250–£300. Also H.S., £150.
Durham County and Sunderland Eye Infirmary.—H.S., £350.
Durham County Council and Seaham Urban District Council.—Asst. school M.O. and M.O.H., £800.
East Ham Memorial Hosp., Shrewsbury Road, E.7.—H.P., at rate of £150.
Edinburgh, Royal College of Physicians.—Bacteriologist, £700.
Elizabeth Garrett Anderson Hosp., Euston Road, N.W.1.—Clin. assistantships in gynæcological out-patient dept.
Essex County.—Temp. M.O. for casualty services, £600.
Huddersfield Royal Infirmary.—Cas. O., at rate of £200.
Hull, Anlaby Road Institution.—Asst. M.O., £350.
Industrial Welfare Society, 14, Hobart Place, S.W.1.—Industrial medical officers.
King Edward Memorial Hosp., Mattock Lane, Ealing, W.13.—Cas. O. and H.S., at rate of £150.
Lancaster, Royal Albert Institution for the Feeble-Minded.—Res. jun. M.O., £425.
Leeds, Killingbeck Sanatorium.—Asst. res. M.O., £250.
Leicester City General Hosp.—Res. M.O., at rate of £300.
Liphook, Hants, King George's Sanatorium for Sailors.—Asst. M.O., at rate of £200.
Liverpool, County Mental Hosp., Rainhill.—Asst. M.O., locum tenens, 8 guineas a week.
Liverpool, Fazakerley Sanatorium.—Med. supt., £750. Also res. asst. M.O., £250.
Liverpool University and Liverpool Maternity Hosp.—Obstet. asst. and tutor, £250.
London Chest Hosp., Victoria Park, E.2.—H.P., at rate of £100.
London Hospn, E.1.—Sen. res. O., £400. Also clin. asst. in X-ray dept., £35.
London University.—Chair of chemistry at Royal Cancer Hosp. £1000.
Luton Borough.—Pathologist and bacteriologist, £650.
Manchester, Christie Hosp. and Holt Radium Institute.—Asst M.O., £400. Also two clinical assistantships.
Manchester, Crumpsall Hosp.—Res. asst. M.O., at rate of £200.
Manchester, Duchess of York Hosp. for Babies.—Jun. res. M.O., at rate of £75.
Manchester, Park Hosp., Davyhulme.—Res. obstet. officer, £400.
Manchester, Saint Mary's Hosps.—Res. obstet. O. for Whitworth Street Hosp., £150. Asst. res. obstet. O. for Whitworth Street Hosp. and jun. res. anæsthetist, each at rate of £100.
Manchester City.—Res. anæsthetists for Crumpsall and Withington Hosp., each at rate of £250.
Manchester Royal Infirmary.—Res. M.O., £200.
Mansfield and District General Hosp.—Res. surg. O., £250. Also H.S., at rate of £150.
Merborough, Montague Hosp.—Res. surg. O., £400.
Miller General Hosp., Greenwich Road, S.E.10.—H.P. and H.S., each at rate of £100.
Newcastle-upon-Tyne Hosp. for Sick Children.—H.P. and two H.S.'s, each at rate of £100.
Norwich, Norfolk and Norwich Hosp.—Hon. dermatologist.
Prescot, Whiston County Hosp.—Sen. res. M.O., £400.
Preston, County Mental Hosp., Whittingham.—Deputy med. supt., £800.
Reading, Royal Berkshire Hosp.—Res. M.O., at Blagrave Branch Hosp. and asst. to pathologist (combined post), at rate of £150.
Rochdale Infirmary and Dispensary.—Second H.S., £150.
Rotherham County Borough.—Asst. M.O.H., £600.
Royal Naval Dental Service.—Dental officers.
Royal Naval Medical Service.—Medical officers.
St. Bartholomew's Hosp., E.C.1.—Dental H.S., £80.
St. Mary's Hosp., W.2.—Jun. asst. radiologist, at rate of £75.
St. Thomas's Hosp., S.E.1.—Temp. res. asst. physician, at rate of £225.
Southampton, Royal South Hants and Southampton Hosp.—Sen. H.S., £200. Also res. anæsthetist and H.S. to general surgical and ear, nose and throat wards, each at rate of £150.
Southampton County Borough.—Asst. M.O.H., £500.
Sutton, Sutton and Cheam Hosp.—Jun. res. M.O., at rate of £100.
Swansea County Borough.—Asst. M.O., £500.
Torquay Borough.—Deputy M.O.H. and asst. school M.O., £600.
University College Hosp., Gower Street, W.C.1.—Sen. asst. radiologist, £250.
Walsall General Hosp.—Cas. H.S., at rate of £150.

Births, Marriages and Deaths

BIRTHS

GLEAVE.—On July 28, at Cherat, N.W.F.P., India, the wife of Captain Alfred Gleave, R.A.M.C.—a daughter.

GORDON.—On July 29, the wife of Dr. C. J. Gordon, of Gloucester Place, London, N.W.1—a daughter.

HONEYWILL.—On July 30, at University College Hospital, the wife of Mr. L. J. Honeywill, F.R.C.S.—a daughter.

PANK.—On July 27, at Srinagar, Kashmir, the wife of Major P. E. D. Pank, R.A.M.C.—a daughter.

PEERS.—On July 23, at Nuffield House, Guy's Hospital, the wife of Dr. Anthony Peers—a son.

PREWER.—On July 28, the wife of Dr. R. Russell Prewer, of Broadmoor, Crowthorne, Berks—a son.

PROPERT.—On July 28, at Colchester, the wife of Dr. S. A. Propert—a daughter.

ROGERS.—On July 28, the wife of Dr. Keith B. Rogers—a daughter.

MARRIAGES

HARRISON—MARRYAT.—On July 29, at St. Matthias Church, Richmond, Surrey, George Kent Harrison, M.D., F.R.C.S., to Mary Marryat.

TAYLOR—JARDINE.—On July 27, at St. Andrew's, Thomas Murray Taylor, advocate, professor of law in the University of Aberdeen, to Helen Margaret Jardine, M.D., of Leyton.

DEATHS

AIKIN.—On July 26, at 66, Bedford Gardens, London, W.8, William Arthur Aikin, M.D. Brussels, M.R.C.S., aged 82.

ATKINSON.—On July 26, at Tyrrellspass House, Sybil Atkinson, L.R.C.P.I.

CHARLESWORTH.—On July 27, at 177, Old Brompton Road, London, S.W.5, Francis Charlesworth, M.B. Edin., late of Zanzibar.

FAUSSET-FARQUHAR.—At Aberdeen, Andrew Grierson Fausset-Farquhar, M.B.

FRANKLEN-EVANS.—On July 26, in Buxton, Franklin Paine Franklen-Evans, M.D. Camb., D.P.H., aged 76.

JENNER CLARKE.—On July 29, in Exmouth, William Jenner Clarke, M.R.C.S., late of Newbury, Berks.

M'GONIGLE.—On July 30, at Norton-on-Tees, George Cuthbert Mura M'Gonigle, M.D., D.Hy. Durh., D.P.H., medical officer of health for Stockton-on-Tees.

OGLE.—On July 25, at 223, Randolph Avenue, London, W.9, Charles John Ogle, M.R.C.S., in his 84th year.

POWER.—On July 25, at Berkhamsted, Herts, Henry D'Arcy Power, L.R.C.P.I., L.S.A., late professor of pathology, San Francisco, aged 82.

REID.—On July 28, at Aberdeen, Robert William Reid, M.D. Aberd., LL.D., F.R.C.S., emeritus regius professor of anatomy in the University of Aberdeen.

SAMPSON.—On July 28, Henry Moore Sampson, M.R.C.S., formerly of Painswick, Gloucestershire, and late of Upper Tooting, aged 86.

WILLIAMS.—On July 23, at Much Birch, Hereford, Edward Cecil Williams, M.B. Camb., M.R.C.P., formerly of Clifton, Bristol.

N.B.—A fee of 7s. 6d. is charged for the announcement of Births, Marriages, and Deaths.

HEART OF OAK

WRITING in a racy and conversational style, Dr. I. G. BRIGGS recounts his adventures on land and sea in a book which touches on places as far apart as Rangoon, Australia and the Amazon. (The Surgeon Goes to Sea. London: Longmans Green & Co. 1939. Pp. 269. 10*s.* 6*d.*) Interspersed with these reminiscences of travel are anecdotes about practice ashore; about the patients and situations that have come his way; and about his methods of coping with them. He is a keen observer of what goes on around him, and a skilled hand at committing it to paper. Especially good is his sketch of Singapore, which recalls Kipling in its sophistication and economy of language. Though he seems, as a rule, to be a breezy and kindly doctor, he is less concerned than most when his patients seek other advice. Whilst admiring his sturdy independence it may be wondered whether a little more tact and a little less downright and brutal truthfulness might not sometimes have achieved more for his patients.

NOTES, COMMENTS, AND ABSTRACTS

PHYSICAL METHODS IN RHEUMATIC DISEASE

In the hope that it may be useful to the medical profession the Empire Rheumatism Council has circulated a report, prepared for its scientific advisory committee by Sir LEONARD HILL, F.R.S., and Mr. H. J. TAYLOR, Ph.D. We reproduce it in full:—

INTRODUCTORY

Proclaimed as of value in the physical treatment of rheumatic disease, there are several forms of apparatus offered to the public. Some of these are advertised to the medical profession only; others are advertised to the general community.

It is obviously important that these apparatus should be submitted to accurate scientific investigation. Some may be altogether useless. Others, whilst being in a measure useful, may make claims to have effects which cannot be justified. Yet others are questionable from an economic point of view, since the effects which they produce can, by other means, be gained more simply and at a less cost. In regard to this last category some consideration should perhaps fairly be given to what may be termed the psychotherapeutic factor. If some apparatus which will secure a good effect but at a higher cost than a simpler means can inspire a special degree of faith in the patient, there is no great harm done except to the purse of the purchaser; provided, of course, that no false claims are made, and that the extra charge on "faith healing" account is not unduly excessive. That consideration has been kept in mind during the investigation we have made of various claims.

The following facts are submitted to members of the medical profession in the hope that they will be of use when they are called upon to prescribe apparatus for rheumatic patients. On the general public it cannot be too strongly urged that it is dangerous to employ electrical or other apparatus except on medical advice and under proper supervision.

ULTRAVIOLET RADIATION

The active ultraviolet rays which produce sunburn in the skin are the shortest in the sun's spectrum, 0·3 μ. Still shorter rays are produced by arc-lamps, but these have little power of penetration, and such activity as they have on the skin is not different to that of the ultraviolet rays. The active ultraviolet rays scarcely penetrate beyond the epidermis, and they affect primarily the living epidermic cells, which they damage. The inflammatory reaction of sunburn ensues after a latent period owing to the presence of damaged cell products. Vitamin D is also produced by the action of these rays on ergosterol in the skin.

The iron-cored carbon arc in an arc-lamp is efficient and is cheaper to run than the tungsten arc. The addition of a small quantity of titanium to the tungsten arc does not make any difference to the ultraviolet output of that arc. The contrary has been claimed. The price of mercury-vapour lamps is reasonable, but the charge for stand and reflector usually increases the total cost out of all proportion to their value. The artificial sources of light rays produce in truth mainly infrared rays, less than 10 per cent. of the radiation being visible light.

There is no evidence of the value of different coloured lights other than that of suggestion.

INFRARED RADIATION AND OTHER SOURCES OF HEAT

Water in a layer 1 cm. thick is opaque to radiation of longer wave-length than 1·4 μ. A piece of rat skin 0·41 mm. thick absorbs all radiation of longer wave-length than 3 μ and partially radiation between 2 μ and 3 μ. A dark source of heat, which gives all or nearly all its radiation in the form of wave-lengths longer than 2 μ can therefore have only a surface heating effect; it cannot penetrate the skin. As in the case of a hot-water bath or a hot fomentation heat is conducted in and carried away by the blood circulating in the derma. It is therefore unjustifiable to claim that dark sources emit rays of great penetrating power; and an ordinary domestic electric fire may be as good as a "dark heater" sold for treatment purposes at a far higher price. For example, as compared with an apparatus consisting of a heating coil and reflector costing, say, from 8 to 12 guineas an equally effective piece of apparatus in the shape of a bowl fire can be purchased for from 15*s*. to £1. Red rays and the short infrared rays penetrate through the skin to the greatest depth.

Visible rays other than red on penetrating the epidermis are absorbed in the blood of the derma. Incandescent lamps are the best sources of the more penetrating rays. When a glow-lamp is placed in the mouth about 10 per cent. of the rays penetrate the cheek, 5 mm. thick, of a white man; no rays penetrate the cheek of a negro.

The modern gas-fire with bright radiants is one source of the more penetrating rays. These rays excite flushing and transudation and are more comfortable than rays which heat the surface only. It is claimed that the penetrating rays heat tissues under the epidermis more than they heat the surface.

The flushing, increased flow of lymph and softening of tissue produced by heat, their analgesic effect and their heightening of tissue metabolism are of great value, and can be obtained by simple inexpensive means such as baths, fomentations and radiant heaters. For deep heating the ultra-high-frequency current can be used. This has no specific effect other than heat. Low-energy high-frequency apparatus does not heat; therefore it has no effect other than that due to suggestion, although claims are made to the contrary by salesmen of various apparatus.

MILD RADIO-ACTIVITY

There is no trustworthy scientific evidence of any biological effect of weak radium doses. It is claimed that weak radio-active pads now on the market have a beneficial effect on rheumatism. If in such a pad 0·1 μg. of radium is put, the cost at the current price of pure radium bromide would be 8*s*. If a raw mineral ore containing radium is used the cost would only be a fraction of this. If such a pad is sold for 10 guineas the profit is very great.

An electrically heated pad is useful for treating painful parts and can be bought for about 30*s*. If an electrically heated "radio-active" pad is sold for 20 guineas the profit is exorbitant. No improvement of the clinical conditions other than subjective has been found from treating cases of chronic arthritis with weak doses of radon.

THE CONSTANT CURRENT

The switching on and off of a direct current may cause nerve stimulation at some depth. One cannot therefore say that no effect is procured below the

skin. The effect due to electrolysis, however, is confined to surface tissue since the chemical changes take place at the electrodes. The skin flushes owing to the setting free of acid at the positive, and alkali at the negative, poles. The action can be intensified by dipping, before application, the positive (lint-covered) pole in dilute acid, and the negative one in dilute alkali. The current is used also for iontophoresis, therapeutically active ions being introduced into the tissues by its passage.

MITOGENIC RADIATION

Gurwitsch first claimed that growing rootlets, dividing yeast cells, &c., emitted radiation in the ultraviolet region of the spectrum. Over 600 papers have been published on the subject. The American Bureau of Standards, after carrying out much research and investigating every claim, have come to the conclusion that such mitogenic rays do not exist.

THE STORY OF HAZELL'S

THE glory and power of printing is not all in the past. Its influence in the present makes it a powerful conservator of human progress. It is the handmaiden of all the arts and industries, and a most effective worker in the world's workshop, to polish and refine the civilisation of the age. These words of Carlyle's open the story of Hazell's,[1] a story of one hundred years of printing. In 1839 William Paul set up a small printer's business at 14, Kirby Street, Hatton Garden. Four years later the business was purchased by George Watson, whose memory is perpetuated in the firm's full name, Hazell, Watson and Viney. Today the assets of the company exceed £1,000,000, the number of employees has risen from 3 to 1700, and the working hours have fallen from 69 to 45 per week. In 1850 George Watson installed steam to print the *Band of Hope Review*. Seventy-one years later the firm became responsible for the printing of the *Lancet*, and each week our readers may see how well Hazell's discharge this trust. The story of Hazell's would be interesting if it recorded only the growth of a great business. But it does more. It gives a picture of the social changes of the past hundred years and tells also of the rise of staff welfare as a feature of progressive capitalist enterprise. Hazell's staff clubs, provident, thrift and pension funds, and even the printing works band, which now broadcasts regularly, all go to show how the benign employer can help the employee. One healthy centenarian may pause and forget medicine for a moment to wish many happy returns to another.

THE PROTEIN MOLECULE

THE proteins or albuminoids (to give them an earlier name which is still used) have been recognised as a distinct group of organic compounds for over a century; but their properties are such that investigation by methods which have proved successful in other branches of organic chemistry has not produced results that can be easily interpreted. The importance of proteins as major constituents of living matter, however, has kept them in the foreground as an object of research, and many facts about them have accumulated. Thus, Richter's textbook [2] contained a calculation of the composition of crystallised albumin as $C_{720}H_{1134}N_{218}S_5$, due to Stohmann and Langbein; an estimate by Sabanjeff of the molecular weight as about 15,000, which agrees fairly with that calculated from the formula; and the statement that the products of the decomposition of proteins with acids were mainly fatty amino-acids. The sensitiveness of proteins to reagents seems to have been recognised early, especially the readiness with which egg-albumin forms an insoluble complex with mercuric compounds—a fact which saved the life of the chemist Thénard (1777–1857), who, having accidentally drunk a solution of mercuric chloride instead of a glass of water during a lecture, sent out for eggs and, having swallowed the whites, recovered rapidly from what would otherwise have been a fatal drink. The renewed interest in colloids, after the earlier researches of Graham (1805–69) had almost been forgotten, led to further discoveries about proteins. Svedberg, using the ultracentrifuge, determined the molecular weights of several of them and found that these weights were mostly multiples of 18,000, that of egg-albumin being about 36,000. That of the virus of the tobacco mosaic disease is about 50,000,000. More recently Dr. Dorothy Wrinch [3] has, as a necessary preliminary to the investigation of the structure of chromosomes, analysed the available data relating to that of the proteins. She postulates, instead of a simple but improbable long chain of carbon compounds, a repetition of structural units from which are derived polyhedral forms suited to the globular proteins. Support is given to this cyclol theory by Langmuir,[4] who has also collaborated with Wrinch [5] in suggesting the probable structure of insulin according to the cyclol theory. In the discussion of this paper Prof. J. D. Bernal declared his inability to accept the proposed structure; but Dr. Dorothy Jordan Lloyd said that it was very helpful in "pulling recorded facts together and suggesting new lines of work."

PRACTITIONER'S PROGRESS

EVERYBODY has at least one story to tell but not everybody could render so entertaining an account of his stewardship as the pseudonymous author of "G.P." (London: Blackie & Son. 1939. Pp. 264. 7*s*. 6*d*.). This unpretentious autobiography of one who is, in the best sense, a perfectly ordinary general practitioner, records his entry into hospital, his training and qualification, and his subsequent everyday thoughts and experiences in practice. Because the author writes with simplicity and sincerity of what he knows, without attempting to improve on the facts his book is quietly effective and absorbingly interesting. Never querulously, and often with humour, he enumerates most of the all too exacting demands made on its general practitioners by modern society. Of the medical curriculum he is both destructively and constructively critical. Thus, like many of us, he would like to see every student destined for general practice provided with greater experience of midwifery. He also advocates compulsory post-graduate study for all who have been in practice long enough to have grown stale. Dr. Rainow looks forward to the era of state medicine which will bring doctors into line with civil servants whose privileges and pensions he envies. These, he thinks, outweigh the tiresome restrictions of the individual which are apparently inseparable from bureaucratic control.

Corrigendum.—Mr. L. F. O'Shaughnessy points out that in the report from our Scottish correspondent (THE LANCET, July 22, p. 217) of his lecture in Edinburgh the last paragraph should read: In one series of 20 cases of cardiac revascularisation 15 patients had angina; of these, 1 died on the table, 1 died from uræmia three months later, and 3 died from heart-failure two months after operation.

BAYER PRODUCTS LTD. inform us that their northern branch will be removed on Aug. 4 to new offices at Blackfriars House, Parsonage, Manchester, 3.

1. H. J. Keefe: A Century of Print. The Story of Hazell's 1839-1939. London: Hazell, Watson and Viney. Pp. 224. 10*s*. 6*d*.
2. Richter, V. von, Organic Chemistry, 1899, 3rd Amer. ed., Philadelphia.
3. Wrinch, D., *Nature, Lond.* 1936, **137**, 411.
4. Langmuir, I., *Proc. phys. Soc. Lond.* 1939, **51**, 592.
5. Langmuir and Wrinch, *Ibid*, p. 613.